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OF THE

Michigan State Medical Society

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DR. WALTER HULME SAWYER,
President, Michigan State Medical Society, 1913-1914.

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CONTENTS

THE THYMUS AND STATUS LYMPHATICUS*

JOHN LOVETT MORSE, A.M., M.D.**

BOSTON, MASSACHUSETTS

It is the fashion nowadays to attribute a great variety of symptoms referable to the respiratory tract above the bifurcation of the trachea, all sorts of disturbances of the nutrition and many unusual nervous manifestations, as well as sudden death, to the thymus. In addition to the symptoms which the thymus might theoretically cause by pressure, it is assumed that it has an internal secretion. On this assumption it is easy to attribute any and all symptoms to an increase or diminution in this secretion, as every infant and young child has a thymus. A Roentgenogram of the chest will, of course, show the shadow of the thymus. If this shadow is larger than it is supposed it ought to be, it proves to many physicians that an enlarged thymus is the cause of the symptoms. If the shadow is no larger than they think it should be, they say that there is something wrong with the picture and still attribute the symptoms to the thymus. Whatever the size of the shadow, they usually advise treatment with the Roentgen ray. If the symptoms diminish or disappear at any time after such treatment, they are satisfied that the improvement is due to shrinkage of the thymus, which, of course, always occurs after treatment with the Roentgen ray, *post hoc, propter hoc,* always being a satisfactory explanation to many minds. If there is no improvement in the symptoms, they are likely to recommend more treatment with the Roentgen ray or shift to treatment with radium or the ultraviolet rays.

Physicians in general apparently do not

*This paper was read before the Detroit Pediatric Society in January, 1930. A similar paper was published recently in the New England Journal of Medicine, but, according to the author, is not an exact duplicate, although parts are the same. This paper is here published by the kind permission of both the author and the editor of the New England Journal of Medicine, to whom our grateful acknowledgments are due.—Editor.

**Dr. Morse graduated from Harvard University A. B. 1887; M.D. 1891. He was Professor of Pediatrics in Harvard Medical School 1915 to 1921. Dr. Morse has contributed extensively to the Literature on Pediatrics.

appreciate the fact that there is a difference between the symptoms which an enlarged thymus may cause by pressure on the other structures in the anterior mediastinum, those which may be due to a continuous or intermittent increase or diminution in the hypothetical internal secretion of the thymus and those which may result from status lymphaticus, of which enlargement of the thymus is only one manifestation. There also seems to be a general lack of knowledge as to the normal size and growth of the thymus and as to the size of the "normal" shadow of the thymus as shown by the Roentgen ray.

According to Hammar, Scammon and Boyd, the average weight of the thymus at birth is 13 grams. After a shrinkage of from 5 to 8 grams during the first two weeks after birth, the weight increases to about 17 grams at 6 weeks and 20 grams at 6 months. It then gradually increases to 35 grams at puberty and atrophies to 15 grams at 50 years. These figures are interesting. They tell us nothing, however, as to the size of the thymus in a given baby while it is alive. It is hard to say, moreover, of what use it is to know the size of the thymus in a baby with no symptoms. If it is large enough to cause symptoms from pressure, knowledge of its weight is unnecessary.

The thymus diminishes in weight in inanition and in any condition, whether acute or chronic, which causes loss of body weight. It also diminishes in size in many acute diseases before there is loss of body weight. It is evident, therefore, that the largest thymuses, and consequently the largest thymic shadows, are found in the healthiest and best nourished infants and children. Of interest in this connection is the fact that the lymphoid tissue of the body in general follows the same curve of growth.

The size of the thymic shadow, as shown in the Roentgenogram, varies according to the position of the child when the Roentgenogram is taken and the technic used. It is larger in inspiration than in expiration. Roentgenograms are untrustworthy, therefore, unless the patient is always in the same position, the technic is always the same, and they are taken in full expiration. Roentgenograms, as they are ordinarily taken, show nothing, moreover, as to the thickness of the thymus. There is ample evidence to show that the thymus, and in consequence the thymic shadow, varies in size from day to day. This variation is probably due to the amount of blood which it contains. I have several times seen patients in whom the thymic shadow was much larger one day than it was the next. It is likely that if repeated Roentgengrams were taken during the day it would be found that the size of the shadow varies from hour to hour.

The thymus at birth is relatively short and wide. After birth, with the expansion of the lungs, the thymus becomes narrower and longer. The shadow of the thymus is wider, therefore, at birth and in the first few days after birth than it is later. Any one who has examined the thymus under the fluoroscope will appreciate how its shape varies with the respiration.

It seems evident from the facts just given that it is impossible, even with perfect Roentgenographic technic, to lay down any arbitrary rules as to the "normal" size of the thymus either in the newborn or in older infants and children. Roentgenographic technic being not infrequently far from perfect, it is evident of how little value many Roentgenograms of the thymus really are. It being impossible to determine from a Roentgenogram alone whether the thymus is of "normal" size for the given infant at the given time under the given conditions, it seems unreasonable to take Roentgenograms of the thymuses of all new-born babies, as is now being done at some hospitals and by some obstetricians. It seems still more unreasonable to allow a Roentgenologist, who knows nothing about the individual baby, to decide from the Roentgenogram whether the thymus is enlarged or not and whether it should be treated with the Roentgen ray to reduce its size. The only apparent object in diminishing its size, moreover, would seem to be to protect the baby against sudden death from status lymphaticus. The fallacies in the commonly accepted views regarding status lymphaticus and the relations between it and enlargement of the thymus will be discussed later.

The thymus being situated in the upper part of the anterior mediastinum, between the rigid spine behind and the rigid sternum in front, may, if enlarged, cause pressure on the other important organs which are located in the superior entrance of the thorax. The arteries are so stiff that they resist pressure. The veins may be com-

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pressed, but are usually pushed aside. Pressure on them, however, may cause cyanosis of the face and upper extremities. The nerves are also usually displaced and, therefore, avoid pressure. Much has been written about the symptoms due to pressure of the thymus on the recurrent laryngeal nerve. The symptoms usually attributed to pressure of the thymus on this nerve are laryngeal stridor, wheeziness on inspiration, and a brassy cough. It is difficult to see just how an enlarged thymus could press on the right recurrent laryngeal nerve. It might press on the left recurrent laryngeal nerve, which winds around the aörta from before backward, just to the left of the remains of the ductus arteriosus. It is hard to see, however, how enough pressure could be exerted on this nerve to cause symptoms without marked pressure having first been exerted on the left innominate vein, with consequent cyanosis of the head and arm. The left phrenic nerve would be much more likely to be pressed on, moreover, than the recurrent laryngeal nerve. For some reason, however, no one has attributed any of the disturbances supposed to be due to the thymus to pressure on this nerve. Pressure on the recurrent laryngeal nerve irritates and, therefore, stimulates it. Stimulation of this nerve causes tenseness of the vocal cord and trouble with the voice, but no trouble with breathing and no stridor. Cutting of the recurrent laryngeal nerve causes very little trouble with the voice, and with quiet breathing no trouble in respiration. On exertion and with deep breathing, however, there is dyspnea and a slight wheezy inspiratory stridor. It hardly seems probable that an enlarged thymus could inhibit the recurrent laryngeal nerve without causing marked symptoms of pressure on other structures in the anterior mediastinum. Irritation of the vagus or trachea may cause glottic spasm and a peculiar "brassy" cough, which becomes wheezy when there is complete paralysis of the cord. The vocal cord is tense, however, when the recurrent laryngeal nerve is irritated. Incidentally, Dr. Wolbach, who has been pathologist at the Children's and Infants' Hospitals for many years, tells me that he has never seen a thymus which he thought exerted any pressure on anything and says that he cannot see how enlargement of the thymus could press on the recurrent laryngeal nerve.

The trachea bears the brunt of the pressure. Pressure on the trachea may cause noisy respiration, dyspnea, retraction of the intercostal spaces and cyanosis. If the pressure is sufficient to cause noisy respiration, it will be noisy in both inspiration and expiration, because the pressure on the trachea is exerted during both inspiration and expiration. It is evident, therefore, that when inspiration only is noisy, the cause is not enlargement of the thymus. When noisy respiration is due to the pressure of an enlarged thymus, it is increased by extension of the head, which narrows the upper opening of the thorax. When the thymus is enlarged enough to cause symptoms of pressure, it is almost always palpable in the suprasternal notch and there is definite dullness under the manubrium. Furthermore, the larynx is not depressed during inspiration, because it is kept up by the enlarged thymus. When the thymus is enlarged enough to cause symptoms and physical signs, the Roentgen ray will, of course, show a large thymic shadow. A large thymic shadow, in the absence of the characteristic symptoms and physical signs of enlargement of the thymus, does not prove, however, that other symptoms, often erroneously attributed to enlargement of the thymus, are due to it. In fact, it should never be necessary to take a Roentgenogram of the thymus to determine whether or not certain symptoms are due to the pressure of an enlarged thymus. Likewise it should not be necessary to take Roentgenograms to determine that certain symptoms are not due to an enlarged thymus. It should be plain that they are not due to it, even if the shadow is enlarged, without taking into consideration all the errors which are associated with Roentgenograms of the thymus.

I have seen cases in which the characteristic symptoms and signs of an enlarged thymus were present. Some of them were seen before the Roentgen ray was discovered, and were relieved or cured by the removal of a part of the thymus. Some of them seen later were cured by treatment with the Roentgen ray. Such cases have, however, been very few. In the vast majority of the cases which I have seen, in which the symptoms have been attributed to enlargement of the thymus, they have manifestly been due to other easily discoverable causes, in spite of the fact that Roentgenograms were supposed to show an enlargement of the thymic shadow. The

errors in diagnosis have almost always been due to failure to study the symptoms carefully and ignorance of the unreliability of thymic shadows. I shall mention only a few of the more common mistakes which I have seen.

Cyanosis in the new-born, not so many years ago, was always charged to congenital heart disease, usually to a patent foramen ovale! Nowadays it is almost always attributed to an enlarged thymus, especially in those hospitals which employ a Roentgenologist and have him take a picture of all new-born babies. The causes of cyanosis in the new-born are the same now as they used to be, congenital heart disease, but not patent foramen ovale, atelectasis of the lungs, cerebral hemorrhage, congenital debility, chilling and adenoids, not to mention congenital anomalies like diaphragmatic hernia and congenital hypertrophy of the heart, which are probably just as common as enlargement of the thymus with pressure. All these conditions are easily recognizable, if the trouble is taken to look for them. If it is, it will seldom be found necessary to take Roentgenograms of the thymus. Moreover, if the thymus does exert pressure, it will be on the trachea rather than on the veins and will cause disturbance of the respiration, not cyanosis.

Intermittent attacks of slight cyanosis are not uncommon in infants and young children. These are nowadays often attributed to the thymus. There is no doubt, of course, that the thymus may vary rapidly in size, according to the amount of blood which it contains. It hardly seems reasonable to suppose, however, that an increase in the size would exert sufficient pressure on the trachea to cause cyanosis without causing dyspnea and noisy respiration. It does not seem likely, moreover, that it would compress the veins, which slip aside so easily, enough to cause cyanosis, without also exerting enough pressure on the trachea to produce the characteristic signs. It seems much more reasonable to attribute these fleeting attacks of cyanosis to the unstable circulatory system of the infant than to the thymus. It is hard for me, at any rate, to believe that cyanosis about the mouth in a baby with the colic, in one that is crying hard or is easily chilled, has anything to do with either the size or internal secretion of the thymus, even if some one says that the thymic shadow is larger than he thinks it ought to be.

Many physicians apparently suspect enlargement of the thymus whenever an infant or young child has noisy respiration. A Roentgenogram is taken which is interpreted as showing an enlargement of the thymus. A positive diagnosis of enlargement of the thymus is made and treatment with the Roentgen ray instituted, without any attention being paid to the characteristics of the respiration, the findings on physical examination, or the possible errors in the taking or reading of the Roentgenograms. Under such circumstances, the diagnosis is more likely to be wrong than right and, in fact, it usually is wrong. Treatment with the Roentgen ray does no good, of course, when the diagnosis is wrong. Furthermore, the diagnosis of enlargement of the thymus prevents them from performing operations which are indicated, and which would relieve or remove the real cause of the trouble. Wasson has called attention, in this connection, to the frequency with which the bronchi show evidences of infection in early life and also how frequently infection of the paranasal sinuses is associated with it. He has also called attention to the fact that the reflexes of the young infant do not enable it to raise the mucus from the trachea in an efficient manner and suggests that certain of the cases of thymic stridor may possibly be due to mucus in the larynx and trachea. At any rate, he has found that methods directed toward the relief of such infections have relieved the respiratory stridor and that the respiratory stridor in such cases did not appear any different from that in other cases, which are usually diagnosed as thymic stridor. He calls attention to the fact that even if Roentgen ray therapy, applied to the region of the thymus, does relieve respiratory or thymic stridor, this does not necessarily prove that the stridor is due to the thymus. It is just as likely that the benefit is due to the irradiation of the mucous membrane of the trachea and adjacent bronchi. He notes that improvement often occurs too rapidly to be due to reduction in the size of the thymus and that the amount of stridor does not necessarily vary with the size of the thymus, as shown by the Roentgen ray.

It does not seem as if the obstruction to respiration caused by adenoids could ever be mistaken for that due to pressure on the

trachea from an enlarged thymus, the symptoms are so radically different. Nevertheless, in my own experience it is the mistake most often made. Physicians entirely overlook the snuffles, the "snorty" nose, the open mouth, the difficulty in nursing, the predominance of symptoms in inspiration, and pin their faith on an untrustworthy Roentgenogram. Overlooking all these characteristic symptoms of adenoids and not looking for or not knowing the characteristic symptoms of pressure of the thymus, they do not, of course, examine the nasopharynx for adenoids. If they did, they could not miss them, as, in such cases, the nasopharynx is full.

The inspiratory crowing sound caused by a congenital narrowing or infolding of the epiglottis, with consequent laxness of the aryepiglottidean folds, or to a congenital elongation of these folds—congenital laryngeal stridor—is also not infrequently attributed to enlargement of the thymus. In congenital laryngeal stridor the crowing sound is always in inspiration only and is constant, varying only with the depth of respiration. There are no other symptoms and no physical signs except the deformity of the larynx. If there is pressure on the trachea from an enlarged thymus the abnormal sound is present in both inspiration and expiration, there is usually some cyanosis and the physical signs of enlargement of the thymus are present.

Attacks of laryngismus stridulus in spasmophilia are also occasionally attributed to enlargement of the thymus with pressure on the trachea. If these attacks are due to the thymus, it must be assumed that the thymus enlarges tremendously and almost instantaneously, and as quickly diminishes in size. If it did not, the babies would always die in the first attack. Such an assumption is hardly reasonable. The symptoms of laryngismus stridulus are pathognomonic. The baby takes several short inspirations in rapid succession, each accompanied by a crowing sound. It then stops breathing with the chest in full inspiration. It quickly becomes cyanotic. After it becomes sufficiently asphyxiated, the spasm relaxes and it begins to breathe again. It is hard to see how a sudden enlargement of the thymus could produce a symptom-complex like this. There are, moreover, always other signs of spasmophilia present: tetany, facial phenomenon, peroneal reflex and changed electrical reactions, as well as a diminution in the calcium of the blood.

Another condition for which enlargement of the thymus is often considered responsible is breath holding, that is, a condition in which an infant or child stops breathing as the result of crying or fright and begins again after it gets sufficiently asphyxiated to relax the spasm. If breath holding is caused by an enlarged thymus, it is necessary to assume, as in laryngismus stridulus, that it swells up and goes down again instantaneously, which does not seem probable. Incidentally, a Roentgenogram of the thymus between attacks would show nothing as to its size in an attack.

Other diseases whose symptoms I have known to be supposed to be caused by an enlarged thymus are retropharyngeal abscess, tracheobronchial adenitis, bronchitis and asthma. All of these may cause noisy inspiration and expiration. In bronchitis, however, the noise is most marked in inspiration and in asthma in expiration. In tracheobronchial adenitis the noise is usually louder in expiration than in inspiration, because the thorax is smaller and the pressure greater in expiration. There are always other physical, as well as Roentgenological, signs in tracheobronchial adenitis, and a retropharyngeal abscess can always be felt with the finger. A new growth in the larynx may also cause noisy inspiration and expiration. There is always trouble with the voice when there is a new growth, while there is none when the difficulty in breathing is due to the pressure of an enlarged thymus. It hardly seems necessary to take up the differential diagnosis between the dyspnea, cough and noisy breathing due to bronchitis and asthma and an enlarged thymus. They should never be confused. Nevertheless, when physicians have the thymus on their minds, they overlook the most obvious signs and symptoms and can see nothing but the shadow of the thymus. Many other more unusual causes for disturbances of respiration in early life, which are attributed to enlargement of the thymus, might be mentioned. I will only speak of one rather unusual one, that is, a round worm crawling from the esophagus into the larynx.

The thymus is not infrequently supposed to be responsible for convulsions, attacks of faintness, various manifestations of vasomotor instability and even colic. The dem-

onstration of what is interpreted to be enlargement of the thymus by the Roentgen ray is accepted as conclusive proof that these symptoms are thymic in origin. It is hardly necessary to go over the arguments again to prove that it is not possible to determine from a Roentgenogram whether the thymus is larger than it should be in the given child at the given time or not. Even if it could be shown that the thymus was larger than it should be, it would not prove that there was any increase in its secretion. The thyroid is often enlarged in cretinism, for example, but its secretion is diminished. In the conditions now under consideration, the symptoms cannot be due to compression of any of the other structures in the anterior mediastinum by an enlarged thymus. If they are connected in any way with the thymus, they must be due to a change in its secretion, presumably to an increase. It is idle to argue whether an increase in the secretion of the thymus does or can cause such symptoms or not, because, as it is not known what the hypothetical secretion of the thymus does normally, it is impossible to know what will happen if it is either increased or diminished. Moreover, all authorities, that really are authorities, agree that there is no proof that the thymus has an internal secretion. It closely resembles the lymphoid tissues in its principal physiologic and pathologic reactions and most students associate it with these tissues. There are certain indications that it plays some important part in the maintenance of normal nutrition, at least during the period of growth up to sexual maturity. Extirpation experiments show, however, that it is not essential to life and that thymectomy is not followed by any detectible symptoms. Physiologically there is evidently some relation between the thymus, the sex glands, the thyroid and the suprarenals. Granting that there is such a connection, there is nothing to prove or even suggest that it can be responsible in any way for these symptoms. Improvement or disappearance of the symptoms after treatment of the thymus with the Roentgen ray, with shrinkage of the shadow, does not prove that the improvement was due to a diminution of the secretion of the thymus, because the size of the thymic shadow varies continually. The symptoms cease in many instances without any Roentgen ray treatment and without any change in the size of the thymus, and the improvement after treatment with the Roentgen ray may just as well be due to the disappearance of the real and undiscovered cause. It is useless to attempt to argue, however, when there are no premises on which to base the arguments. It is safe to say, nevertheless, that it is wise to look for other causes for these symptoms, even if the Roentgen ray shows what is thought to be an enlarged thymus, before starting treatment with the Roentgen ray. If such other causes are looked for, it will very seldom be found necessary to use the Roentgen ray in treatment.

Infants, children and adults sometimes die suddenly without any apparent cause or from some cause entirely insufficient to account for death, as at the beginning of anesthetization, from sudden shock, the introduction of a needle or in the course of some mild disease. In such cases enlargement of the thymus, spleen, lymph nodes, tonsils and Peyer's patches, hyperplasia of the bone marrow, and hypoplasia of the chromaffine, gonadal and cardiovascular systems are not infrequently found. The combination described above is spoken of as status lymphaticus. When this condition is found in instances in which death has occurred suddenly, without apparently sufficient cause, the death is said to have been due to status lymphaticus. There is, however, no proof that death was due to it. It is purely an assumption, based on the absence of any other obvious cause. There are plenty of sudden deaths in which no evidences of status lymphaticus are found and plenty of deaths from other causes in which the evidences of status lymphaticus are present. In this connection it may be pertinent to mention the little girl in Minnesota whose sudden death was attributed to status lymphaticus, but who later was found to have been electrocuted by stepping on an electrically charged stair, and another whose sudden death in a convulsion, at first attributed to status lymphaticus, was found to have been due to strychnia poisoning.

It has been quite generally assumed that enlargement of the thymus is the most important manifestation in status lymphaticus, and that the hyperplasia of the thymus is in some unknown way the cause of the other characteristic changes and of the sudden death. No one believes now, I think, that death in these cases is due to mechanical pressure of the thymus. If it is due to the thymus, it must, therefore, be connected in

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some way with the hypothetical secretion of the thymus. The view that deaths in cases of status lymphaticus are due to lymphotoxemia originated in Svehla's observation in 1896 that thymus extracts lowered the blood pressure and accelerated the heart rate. These manifestations are now known not to be specific, but to be produced by many foreign proteins. It is hardly necessary to mention again that the consensus of expert opinion is that the thymus has no secretion and is simply a lymphoid organ. At any rate, if the thymus does have a secretion, there is nothing to suggest that this secretion can be the cause of sudden death. It is safe to say that there is no evidence to show that the enlarged thymus in status lymphaticus has anything to do with the causation of the other changes found in this condition. It is just as probable that the enlargement of the thymus is due to the same cause or causes as the other pathologic changes, if they are pathologic, or that the general lymphatic hyperplasia is the cause of the enlargement of the thymus. There is, moreover, some evidence to show that when there is a diminution of the secretion of the suprarenal medulla there is hypertrophy of the thymus. This suggests the possibility that in status lymphaticus the primary trouble is in the suprarenal medulla. This would not explain, however, the other changes found in status lymphaticus.

It has been suggested that the cause of sudden death in status lymphaticus is a sudden fall in the blood pressure produced by a temporary exhaustion of a deficient adrenal secretion. This explanation does not seem satisfactory, however, in view of the fact that, experimentally, cutting off the secretion of the suprarenals does not lower blood pressure and never causes instant death. In fact, animals can live indefinitely without any suprarenal medulla. It has also been suggested that a sudden cessation of the adrenal secretion would instantly cause hypoglycemia and sudden death. Adrenalin, however, simply mobilizes sugar from the glycogen in the liver and muscles. Cessation of the adrenal secretion would, therefore, simply prevent the mobilization of more sugar. It could not have any effect in diminishing the amount of sugar already in the blood. Certain cases of sudden death attributed to status lymphaticus occur during anesthetization. Ether, however, diminishes the insulin content of the blood. It is evident that if the insulin is diminished, the sugar in the blood will not be utilized. Therefore, the sudden cessation of adrenal secretion would not have any effect. Wiesal has suggested that sudden death in status lymphaticus is due to the injurious raising of the vagus tone in association with insufficiency of the chromaffine and sympathetic nervous system. This suggestion, while vague and indefinite, may perhaps touch on one of the factors involved. Whatever the true explanation of sudden death in status lymphaticus is, provided that sudden deaths occurring in status lymphaticus have anything to do with status lymphaticus, which is doubtful, it seems evident that there is no proof that the thymus has anything to do with it.

One thing is certain, namely, that enlargement of the thymus, provided what is thought to be an enlargement really is one, does not necessarily indicate that a child has status lymphaticus. It must be emphasized again, moreover, that it is very difficult to determine from a Roentgenogram whether a thymus is enlarged or not. It is obviously irrational, since it is not known whether status lymphaticus is a cause of death or not, whether the thymus has anything to do with the etiology of status lymphaticus or whether the shrinking of the thymus has any effect in status lymphaticus, and since the thymus may be enlarged from other causes and the evidence afforded by Roentgenograms is not sufficient to prove that it is enlarged, to claim that every child that shows what is supposed to be an enlarged thymus with the Roentgen ray is in danger of sudden death. It is unreasonable to say, therefore, that every child should have a Roentgenogram taken before it is given ether or operated on in any way and, if the Roentgenologist thinks the shadow is larger than it should be, given Roentgen ray treatment. Nevertheless, this is just what is claimed by some Roentgenologists and some physicians.

It must be admitted, of course, that children have died unexpectedly under anesthesia and that some of these children have shown the changes of status lymphaticus. Many others have died under anesthesia that did not show these changes. The question at once arises as to whether the deaths in those that showed these changes were not due, as in the others, to improper anesthetization, prolonged operation or impaired re-

sistance from infection. No one, of course, can tell. It must also be admitted that many children in the past, before the Roentgen ray was discovered, must have had thymuses which would now be considered enlarged and did not die under the anesthetic. Moreover, children that are said to have enlarged thymic shadows are now operated upon without injury. It is also true that children who have had Roentgen ray treatment before operations have not died. No one knows whether they would have died or not if they had not been treated. The probabilities are that they would not have died. The basis for this statement is as follows. It is claimed that 7% of all children under ten years of age have enlarged thymuses which demand Roentgen ray treatment before operation. There is no reason to suppose that enlargement of the thymus is any more common now than it always has been. It is certain that in the past 7% of the children under ten years of age, who have been anesthetized and operated upon, have not died. The operative mortality in the past, as in the present, has varied with the skill and judgment of the operator and with the institutions at which the operations were performed. Treatment with the Roentgen ray before operations will not prevent death from improper anesthetization or prolonged and serious operations. Deaths have occurred, therefore, after Roentgen ray treatments. It is assumed, because the children had been treated with the Roentgen ray, that these deaths were not due to status lymphaticus. Is it not just as reasonable to believe that the deaths that occur in children that have not had Roentgen ray treatment are not due to status lymphaticus but to improper anesthetization and poor operative judgment and technic? It would be neither polite nor politic to publicly advance the evidence in favor of this contention.

Having had no operative experience myself and fearing that I might be minimizing the frequency of the occurrence of death from status lymphaticus during anesthetization and operation, I asked a number of Boston surgeons and anesthetists, whose experience with children had been large, how many deaths they had seen in children during anesthetization and operation, which they thought were due to status lymphaticus. Of twelve very well known surgeons, one had seen one case in which there was no other evident cause. and another remembered two in which that diagnosis had been made. One of these children had been operated upon before, however, without any difficulty. The anesthetists said that they had never seen a death which they thought was due to status lymphaticus. They also said that they not only considered it unnecessary to take Roentgenograms of the thymus before operation, but that they did not fear to give an anesthetic, even if a Roentgenogram did show what was thought to be enlargement of the thymus. Garland, moreover, has recently summarized 1,564 routine autopsies at the Massachusetts General Hospital. Enlarged thymuses were found in 23. Nine of these were in adults, eight of whom had hyperthyroidism and one a severe and chronic infection. Eleven had survived the immediate effects of major operations. Only one case had died during operation, a sigmoidostomy for intestinal obstruction.

It is evident from the experience of these surgeons and anesthetists that death from status lymphaticus, at any rate in Boston, as the result of anesthetization and operation must be a most unusual occurrence. There is much doubt whether the deaths that are attributed to status lymphaticus during anesthetization and operation are really due to it. There is no proof that enlargement of the thymus is the primary or causative factor in the complex described as status lymphaticus. There is no justification, therefore, for the assumption that shrinking of the thymus with the Roentgen ray will have any effect on status lymphaticus. There is much reason to believe that many of the Roentgenograms taken do not show the real size of the thymus and much evidence to show that it is very difficult to decide from a Roentgenogram whether the thymus is larger than it ought to be in the given child at the given time. It does not seem either reasonable or justifiable, therefore, to say that a Roentgenogram should be taken of every child before anesthetization or operation, that treatment with the Roentgen ray should be given in every case before anesthetization and operation, if the Roentgenologist thinks that the shadow is enlarged, and that the physician or surgeon who does not follow this course of procedure is negligent.

The opposite point of view is that "since there is no evidence that the thymus is not an integral causative factor in the type of

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death under discussion and it is known that involution of the thymus takes place rapidly and *without harm* following X-ray and radium treatment, it would appear not only desirable but requisite, until such time as more exact knowledge or experience shall warrant a contrary opinion, to prescribe radiation therapy for those children presenting X-ray evidence of 'broadened mediastinal shadow' without symptoms, when general anesthesia or surgery is contemplated."

I leave it to you to decide for yourselves which of these conclusions is correct. I, of course, have no doubt. Such differences of opinion, however, place the conscientious physician, who wishes to do everything that is necessary for his patients, but who also wishes to remain an honest man and to save his patients unnecessary expense, in an unfortunate position. At present all that he can do is to explain the situation to his patients and let them decide what they wish to have done. He can be comforted, however, by the knowledge that this fad will wear itself out, as have so many others, and that common sense will again prevail.

SECOND PEDIATRIC CONFERENCE ON DISEASES OF INFANCY AND CHILDHOOD*

The Couzens Fund Clinic held in Flint on January 15th was well attended and the same marked interest was shown as at the first clinic given under the auspices of the Couzens Fund at the University of Michigan at Ann Arbor. The speakers were Dr. D. J. Levy of Detroit, Dr. Edward C. Davidson, Dr. Grover C. Penberthy of Detroit and Dr. C. C. Young of the Michigan State Department of Health.

Dr. Levy gave a clinic on two subjects, first, Hemorrhage of the New Born, and secondly, Feeding of the New Born. In the first address Dr. Levy spoke on the causes of hemorrhage. Hemophilia was, he said, a rare cause in the new born but was manifested primarily in the second year. Of the causes numerated were injury, ulceration in the alimentary tract, congestion due to cord strangulation, sepsis, and lastly maternal and familial tendency with the lack of vitamin B in the mother a possible factor.

A hemorrhage might be external or internal. External hemorrhage might involve the skin and mucous membrane, umbilicus, nose, or it might be from cephalohematoma. Internal hemorrhage might be intra-thoracic, intra-abdominal, or intra-cerebral. Among the diagnostic factors in the cerebral hemorrhage might be mentioned the gradual and late onset, namely, the second or fourth day. The labor history, where we have a normal, quick, spontaneous labor, may aid us in coming to a conclusion. The little patient usually manifested a drowsiness alternated with restlessness. We might have dyspnea, slow, rapid or irregular breathing and also a slow, feeble or irregular pulse. Lack of interest in food in the little patient should always be taken as suggestive. The condition of cerebral hemorrhage might be accompanied by irregular temperature or fever, cyanosis, twitching, convulsions, projectile vomiting.

In the treatment of these cases Dr. Levy spoke against too active treatment, especially in the cerebral cases. The patient should be kept warm. If stimulation is indicated it should be used with caution. In regard to blood therapy, the speaker went on to say that in giving intravenous blood the process of "typing" was necessary. The maximum individual dose should be 1/60 of the body weight. Animal serum was less effective.

FEEDING OF THE NEW BORN

In his discussion of the subject of feeding, Dr. Levy dwelt upon the kind of food, the quantity and the interval between feedings. Though food be right in kind and quantity, success of the feeding program, he said, depended also on a proper feeding interval. Six feedings at four hour intervals, or a minimum of three and one-half hours should be observed whether the feeding be artificial or maternal. It could be easily demonstrated by means of the X-ray that the stomach was not emptied in three hours.

If the three hour interval were employed

*This article consists of an abstract of each of the clinical addresses given at the Couzens Fund Clinic held in Flint. They are summarized accounts of the clinicians' addresses. This fact is mentioned so that it will be understood that the reader will not hold the speakers to account for the phraseology employed, as no attempt has been made to quote or to report verbatim.—Editor.

the infant's stomach was apt to become overdistended and painful. There was a tendency to regurgitation and vomiting. Residual milk, the speaker went on to say, tended to ferment and produce gas. On the other hand too frequent feeding did not give the mother the opportunity for necessary attention to other children as well as other domestic duties. If the baby did not receive sufficient food at the three and one-half hour or four hour schedule it would probably receive less and not more if fed oftener.

Breast feeding had its advantages. The contra-indications to this form of nourishment consisted of pulmonary tuberculosis or of hyperthyroidism on the part of the mother. Insufficient quantity of milk calls for complemental or supplemental feeding.

Dr. Levy then took up the technique of weaning infants. In regard to milk dilutions, he said, the most frequent fault encountered was in keeping the child too long on too weak a mixture. Dilutions containing less than ⅓ milk were never necessary. Lactic acid milk, he said, might be given to the new born baby undiluted, but in the earliest days it should have all the cream removed, and in the earlier weeks one-half of the cream removed. In all cases, the speaker went on to say, about five per cent sugar should be added to ensure proper metabolism of the fat. New born babies were more dependent on fluid intake during their first days than on caloric values. Dehydration when present was to be combated by saline or five per cent glucose solution or by hypodermatoclysis.

The total quantity of food required in twenty-four hours according to Dr. Levy, was as follows: 2nd day 2 oz.; 4th day 4 oz.; 5th day 6 oz.; 6th day 8 oz.; 7th dav 10 oz.; 2nd week 12 oz.; 3rd week 16 oz. to 20 oz.; 3rd to 4th week 25 oz.

The speaker went on to say that fever from inanition must be differentiated from that due to infection. If occurring during the first half of the first week the fever is probably due to insufficient food or fluids; if during the second half, we might consider infection or some other cause.

The technique of feeding involved the emptying of both breasts and the employment of both breasts at the outset. The total time of breast feeding should be limited to twenty minutes. If the baby showed too sharp an initial drop in weight or it continued to lose after the fourth day, or failed to gain at that time, complemental feedings should be instituted. Efforts should be made in every instance to have the baby back to its birth weight by the end of the second week. A scanty, olive green mucoid stool signified hunger. Discomfort during or immediately following feeding was due, the speaker said, to swallowed air and not to fermentation. Gas occurring later might be due to fermentation. The presence of swallowed air could be relieved by holding the infant upright rather than by using carminatives. Vomiting was apt to be due to a faulty schedule or faulty formula, cardiospasm, pyloricspasm, esophageal stricture or cerebral hemorrhage.

In regard to the subject of vitamins the speaker advocated cod liver oil, orange juice by the end of the first month.

CYANOSIS OF THE NEW BORN

On the subject of cyanosis of the new born Dr. Levy enumerated the causes as follows: Drugs or anesthetics administered to the mother; lack of development of the respiratory center in the child, chilling, amniotic fluid or aspirated food in the air passages, congenital anomalies of the respiratory system; distention of the stomach and meteorism; cerebral hemorrhage and atelectasis. The thymus, Dr. Levy said, was very much less a causative factor of cyanosis than had up to recently been supposed.

He outlined the treatment by advising first the discovery of the cause and its correction. In the new born particularly the cleansing of the air passages if necessary bv the use of the tracheal catheter was advisable. Oxygen and oxygen and carbon dioxide might be indicated, also heat. If artificial respiration were resorted to the speaker counselled extreme caution as to the method employed, especially in cardiac and cerebral cases.

THE TREATMENT OF BURNS

This was the subject of Dr. Edward C. Davidson's address. He went on to say that there was evidence of a formation of a toxic substance at the site of a burn, the absorption of which was responsible for the constitutional reaction. The rate of absorption could be decreased by the use of a protein precipitant such as tannic acid which accomplished the purpose bv the formation of more or less insoluble compounds which were held upon the surface of the wound. About forty-five per cent of burns which

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cause death were in children under six years of age. The average age of burn cases admitted to the Children's Hospital of Michigan was three years. The speaker went on to say that more boys die of burns than girls.

The prognosis of any given case of burn in childhood must be guarded because of the profound metabolic upset. It has been stated that an adult may tolerate a burn involving one-third of the total body surface, while a child will tolerate a burn involving only one-seventh of the total cutaneous area. It has further been stated that in regard to prognosis the extent was of more importance than the depth of the burn. This statement is true for immediate mortality but it is certainly not true for ultimate mortality in children.

The depth of a burn is determined by the temperature of the agent and the duration of the contact. The skin of a child is thin and delicate. Accordingly, an intensity of heat applied to the skin of a child for a given increment of time may cause a third degree burn, while the same thermal stimulus on the thicker, more resistant skin of an adult may cause only a first or, at most, a second degree burn. For this reason large deep burns are seen frequently in children from what appears to be relatively slight thermal injury. This may leave a large granulating wound which is very badly tolerated early in life and is of grave prognostic significance. Unless prompt epithelization is accomplished by skin grafting the picture of exhaustion develops and complications occur.

SHOCK

"When a child receives a burn of any great extent, shock almost invariably occurs. Cannon has presented a rather plausible theory of shock and concluded that it is due to the absorption of autolyzed protein from the site of the injury. Crile, on the other hand, emphasizes the stimulation of the sensory nerve endings. It would, therefore, seem reasonable to assume that any drug which would precipitate the protein devitalized by the burn and stop absorption, at the same time dulling the exposed sensory nerves, would be effective, regardless of which theory one accepts. Tannic acid is such a drug.

"Our method," continued the speaker, "has been to clean up the burn with the least possible trauma. Place the child in a light tent and spray the burned area with an aqueous solution (5 per cent) of tannic acid every fifteen minutes until the burned area is a light brown color.

"It has been shown that marked concentration of blood occurs and that if this is permitted to exist it is soon incompatible with life. It is known that hyperglycemia occurs during this initial period and that the blood chlorides are markedly depressed. Because of these facts, normal saline is given instead of glucose subcutaneously, intravenously and per rectum. In very extensive burns transfusion of whole blood is done as promptly as possible before shock has occurred."

TOXEMIA

"When a burned patient survives this initial collapse there is a later secondary toxemia which occurs about 36 hours after the thermal trauma. It has been shown that precipitation of the tissue, devitalized by the burn, with tannic acid limits absorption and prevents the loss of body fluids at the site of the burn by covering it with a parchment-like protective coagulum. It has further been shown that moistening this dried material immediately releases the toxic material and causes a profound change in the patient.

LATE TREATMENT

"It has been observed in second degree burns that the coagulum acts as a splint, and healing takes place beneath it. This is generally complete at the end of two or three weeks. Efforts made to separate the coagulum before it has spontaneously separated have invariably resulted in infection. Should the coagulum remain adherent more than 21 days, it may be assumed that the burn is one of the third degree. It is relatively safe to soak off small pieces of coagulum at this time, but great care must be exerted not to overwhelm the patient.

SKIN GRAFTING

"Unless the raw granulating wound, which presents in third degree burns upon separation of the coagulum, is promptly epithelized various complications occur. For this reason the wound is covered with pinch grafts at the earliest possible date. It has been observed that a profound anemia has developed by the time that the child is ready for grafting. Because of this, transfusion is often resorted to previous to grafting in an effort to insure a satisfactory result.

"The procedures above outlined have resulted in a striking reduction in deaths from

shock and toxemia of burns. The late mortality remains high, but this may probably be attributed to children being carried over who previously died promptly, either from shock or the toxemia of burns."

TREATMENT OF EMPYEMA

This subject was handled by Dr. Grover C. Penberthy of Detroit. Empyema usually followed pneumonia. In the surgical treatment, pneumo-thorax was a complication to be avoided. By resorting to closed drainage the mortality from empyema had been reduced from about 30 to less than 10 per cent. In the management of empyema the speaker advocated the avoidance of opened pneumo-thorax in the acute stage and the prevention of chronic empyema by providing dependent drainage, rapid sterilization and obliteration of the infected cavity. Care should also be given to the nutrition of the patient.

The classification of the stages of empyema as given by Moschowitz, namely as formative, acute and chronic, was followed. During the formative stage of the disease the child may be very sick with pneumonia when the presence of fluid will materially diminish the breathing space or "vital capacity." It should be remembered that the collapse of one lung is not always followed in a compensatory way with the normal lung. Dr. Penberthy went on to explain that the vacuum or negative pressure existing between the chest wall and the elastic lung is essential to respiration, and if the patient cannot produce this, little or no air enters the lung. With an opening in the chest wall producing a pneumo-thorax, the negative pressure is destroyed, thereby lessening the pull of the expanding chest. Unless there is compensation by increased respiratory effort and the negative pressure is re-established, asphyxiation is apt to occur. If a slight negative pressure is re-established, the animal might get air into the lungs, but not sufficient to maintain life.

It should be constantly borne in mind that an alteration of pressure in one pleural cavity is accompanied by an alteration of pressure to practically the same extent in the other pleural cavity, if there are no adhesions or any thickening of the mediastinal structures. It has been further shown that the ability of an animal to offset the effects of open pneumo-thorax depends upon the size of the opening made and the size of the animal. The same comparative results would apply to the human. The muscular chest wall and vital capacity of the adult is greater than that of the child, consequently there would be an increased danger of producing a pneumo-thorax in a child. The total air intake of a child, as compared with the adult is small, so a small opening might so lessen the negative pressure as to cause death. A small leak about a catheter in the closed drainage has been observed in a child, as a factor in producing dyspnea, cyanosis, a rise in temperature and a rapid, thready pulse.

Besides the presence of fluid, other factors which should influence the treatment of a child sick with empyema are the associated toxemia, fever, dyspnea, malaise, fatigue, loss of appetite, loss of weight. All this indicates the most conservative manner of treatment. The treatment during the formative stage should be aspiration either every day or every other day. The speaker advocated the insertion of a catheter under local anesthesia for drainage when the pus became a cloudy yellow with the consistency of thin cream. Dr. Penberthy's technique was given as follows:

The catheter is first tested to be sure that it snugly fits the trocar. The trocar and stilette are then plunged into the chest wall, the stilette withdrawn and the finger placed over the end of the cannula. The catheter, the tip cut on the bevel, an extra eye cut one-half inch from the tip and the distal end clamped, is then threaded into the cannula. The cannula is then carefully withdrawn over the catheter. A 50 c.c. syringe is next attached before removing the clamp, and with the clamp removed, the pus is aspirated. The pus is slowly withdrawn and aspiration stopped if there is any coughing or evidence of bleeding. A small adhesive strip is then placed about the catheter like a cuff at the chest wall and the catheter fixed to the skin by strips of adhesive.

Aspiration may be started a few hours later. To test the irrigation saline or boric solution is used and if found satisfactory a neutral 0.5 per cent solution of sodium hypochlorite (Dakin's solution) is injected and withdrawn. Some Dakin's solution is allowed to remain in the cavity at the end of each irrigation. The catheter may be unclamped and irrigation practised every 3 or 4 hours.

In the post-operative management of em-

pyema it is important to check up frequently by means of the X-rays to determine the position of the catheter as regards the fluid level, the amount of fluid if any, and if there is a pneumo-thorax. The catheter may be left in place for 2 or 3 weeks and then cut one inch outside the body and left as an open drain. If this drainage is inadequate the intercostal opening may be dilated with the hemostat and a larger tube inserted.

Adhesions will have formed to hold the lung out and not permit its collapse. Frequent determinations of size of the cavity are valuable in following case. Best done by taking child to operating room.

Dr. Penberthy considered the conservative method of handling empyema to have reduced the mortality from 30 to 10 per cent. It required more close watching and attention than did rib resection. Frequently rib resection might be necessary later, at which time it might be much more safely done.

ACUTE OSTEOMYELITIS—ITS DIAGNOSIS AND TREATMENT

Dr. Penberthy also gave a clinical address on this subject. He considered osteomyelitis one of the most serious diseases of childhood, owing to the possibility of a septicemia which might terminate fatally. The acute form of the disease was most often found among the poor children of the city between the ages of two and ten years. Periostitis was associated with and usually secondary to osteomyelitis.

Dr. Penberthy then went on to review the anatomy of the long bones and show how their peculiar architecture was affected by the disease. Acute osteomyelitis was, he said, a blood-borne infection, having as probable foci skin lesions such as boils and infected blisters, and an ear infection might also be the cause. The acute process often began or was localized near the epiphysis of the long bone. According to Wilensky the process was a thrombo-embolic phenomenon with the development of a pathological process characterized by thrombo-arteritis or thrombo-plebitis and necrosis of bone cells and tissue. Trauma was considered a contributory factor in the localization.

The organisms most commonly found were the staphylococcus aureus and occasionally staphylococcus albus. The streptococcus was seldom found. The blood picture showed a leucocytosis and an increase in the polymorphonuclear cell counts from 20,000 to 35,000. Polynuclear 82 to 93%. The X-rays were of little value in making a diagnosis in the early stages of the disease, that is, during the first week. The early diagnosis of acute osteomyelitis required careful analysis of the different points in diagnosis. Pain and tenderness near a joint should lead one to suspect an acute arthritis or rheumatic fever. Rheumatic fever is seldom monoarticular and it is quite impossible to manipulate a swollen, hot rheumatic joint without evidence of severe pain, while a joint near an acute osteomyelitis can be moved, if manipulated gently. The constitutional symptoms are also more pronounced in osteomyelitis. Suppurative joints and bursitis can be eliminated by aspiration and examination of the fluid. The two other conditions giving a mono-articular clinical picture are tuberculosis and gonorrheal arthritis, both of which easily can be eliminated. Other conditions suggesting somewhat the picture of an osteomyelitis are: Green stick fracture, localized cellulitis, epitrochlear adenitis with swelling, redness and tenderness above the elbow, erysipelas, erythema nodosum and scurvy.

TREATMENT

The treatment of acute osteomyelitis is essentially surgical, and the earlier the diagnosis can be made and drainage instituted the better is the prognosis. Although proper and adequate drainage is important, it is unwise to attempt too much surgery as these patients are seriously ill. A few drill holes in the shaft at the site of the localized tenderness and the removal of the portion of the cortex between them many times suffices. The operating period should be as short as possible, consistent with good work. The anesthetic of choice is gas oxygen and the surgery done under tourniquet control. A plaster dressing should be applied, immobilizing the joint above and below, or a Thomas splint may be used.

Operation may follow a preliminary blood transfusion, or the transfusion may be given after operation. and repeated as the needs indicate. Fluids are forced in addition to giving saline and glucose, either intravenously or sub-cutaneously, depending upon the condition of the child. Vaseline gauze is packed into the wound. The question of Dakinization of the wound depends somewhat upon the findings at operation. Minimizing the surgical dressings is to be encouraged after the method of treatment advocated by Orr.

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FUNDAMENTAL FACTORS UNDERLYING THE DEVELOPMENT OF ALIMENTARY DISORDERS IN INFANCY*

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The causes underlying the development and manifestation of acute alimentary diseases are various and at times seem quite complex. The seeming haziness of the medical practitioner as to fundamental causes underlying the disorder and his indecision as to the proper therapeutic procedure for a given case, are indications of this fact. He gropes in a maze of perplexities and finally attempts a way out of his difficulties by falling back upon such empirical knowledge and experience as he may have, or has gotten as an emergency loan from a sympathetic colleague.

There are fundamental causes underlying the development and manifestation of acute alimentary disorders. If they are clearly recognized and logically analyzed, and fitted to the case, they will simplify the diagnosis, and, what is much more important, will give clear-cut indications as to procedure and choice of treatment.

The cause of the acute intestinal disorder may lie in the food itself—the amount, composition and condition in which it is given. It may lie in the individual and may be concerned with such factors as metabolic dysfunctions, faulty enzyme action, or the gastro-intestinal tract. It may lie in extraneous causes which have been introduced into the organism in the nature of enteral or parenteral bacterial infection or parasitic or protozoan infestation. It may be a part of, or indirectly referable to constitutional disease or disposition in the individual.

In considering the causes of acute intestinal disorders and their treatment, it is of fundamental importance to have a clear understanding of the conception of food tolerance on the part of the organism and the conditions or factors which influence it. For practical purposes it is sufficient to consider in this light only the three principal food components, protein, carbohydrate, and fat. The minerals and accessory factors are important but do not play a dominant role in the picture or development of acute alimentary disturbances.

It is important to recall and remember that these food components have definite and individually very different chemical and physical characteristics. and are affected in various ways by normal and abnormal conditions in the individual, particularly if they take place in the gastro-intestinal tract. The chemical structure of these components so largely determines their characteristic behavior. Fat has a comparatively simple structure, is made up principally of three essential elements, and of these carbon and hydrogen are far in excess of oxygen. Expressed in terms of activity it means that it is a comparatively inert food component, and not particularly reactive to chemical, bacterial, or enzyme action. Physiologically it is the most inert food component and almost invariably slows down gastro-intestinal motility.

Carbohydrate is the active dynamic component. Of very simple structure, consisting also of three essential elements, it is far more reactive than fat on account of the arrangement of these elements around the carbon atom, and the far greater preponderance of O and OH group.

The component is easily attached and broken up by various influences, chemical, bacterial, enzyme, or what not, and then quickly rearranges into all manner of compounds, generally of lower fatty acid types, many of them highly toxic in their effects.

It leaves the stomach more rapidly than either fat or protein. Practically all of its breakdown for good or bad use of the body takes place in the small intestine, and is accomplished before the large bowel is reached.

It is the chief component involved in all diarrheal states and is the most treacherous component to deal with in the reestablishment of normal conditions.

The structure of protein differs widely from that of either fat or carbohydrate. Its huge molecule consisting to such a large extent of ring compounds, and the great preponderance of nitrogen in the molecule makes it quite invulnerable to bacterial attack, or enzyme action, and prevents the easy disintegration of its molecule.

Its effect on gastric motility is greater than that of fat, but decidedly less than that

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of carbohydrate. The tolerance of the organism to this component is seemingly excellent under all conditions of health and disease.

If the feeding régime is safely within the tolerance line for the various food components mentioned, and is adequate from a caloric standpoint, there will be no untoward symptoms and the infant will show satisfactory gain and well being, and absence of all symptoms of gastro-intestinal disease.

If the tolerance line is transgressed in any one or in all of the components, the transgression is promptly reflected in symptoms pointing to gastro-intestinal disorder. For practical purposes, the transgression concerns usually only the carbohydrate and fat component if the food factor alone is concerned as a cause.

The infant's tolerance can be affected or influenced by various factors. Constitutional disease or dyscrasias may influence it unfavorably. The gastro-intestinal lability of the congenitally syphilitic, the tuberculous infant, the fat tolerance of the infant affected with constitutional dycrasias such as the exudative or lymphatic diathesis are well known examples.

Endocrine dysfunction, although rarely encountered, may be a factor. Gross overfeeding in fat or carbohydrate or in all three components may cause a breakdown with eventual manifestation of alimentary disease. There may be decomposition of the components before they are introduced into the alimentary tract. This is easily possible and commonly occurs in the giving of spoiled food, especially the milk foods. There may be alteration in the intestinal flora from various causes, more seldom disorder of enzyme function. Heat and excessive degrees of dehydration, especially the latter, causing great disturbance in the acid base equilibrium of the organism are grave contributing factors. Then there is finally the enteral bacterial or protozoan infection and the far flung parenteral infection, also always bacterial in nature and seldom passing without some very definite effect upon the gastro-intestinal tract.

The transgressions of tolerance are expressed in the manifestation of the well known symptoms of gastro-intestinal disease. These are mild or severe in proportion to the degree in which the tolerance has been transgressd.

If spitting, regurgitation, vomiting, or constipation are the predominant symptom, it is safe to assume that the fat component in the food is at fault and must be modified. The buffer value of the food and hydrogen ion concentration are also factors to be considered.

If it is some form of diarrhea unaccompanied by blood in the stool, the carbohydrate component will be found at fault if the causative factor lies in the food itself, and is not traceable to enteral or parenteral, bacterial, or protozoan infection.

It is very commonly characteristic of the diarrheas due to enteral or parenteral infection that they contain blood in the stool. Clinically, this distinguishes them from other forms and serves as a good differentiating point.

It is important to have a fairly complete knowledge of the various milk modifications and milk food preparations now so widely used in infant feeding. Nearly all of them are practical expressions of some of the excellent research done in this field in the past ten or twenty years.

Their composition in the three principal components, fat, carbohydrate and protein, must be accurately known. The buffer value and hydrogen ion concentration are also of importance.

It goes without saying that the food must be clean.

Bearing in mind the facts mentioned above, the approach to a case of acute alimentary disturbance becomes quite simple. The accurate analysis of the case should be possible enabling one to get a clear cut opinion as to the type of alimentary disorder confronting one and at the same time giving clear cut indications as to treatment particularly with reference to feeding.

The symptoms pointing to gastro-intestinal disorder are generally prominent and must be carefully noted because they indicate not only the transgression of tolerance but often identify the component or phase involved. Careful questioning with critical inspection of the case and of the antecedents quite readily establishes or illuminates endocrine and constitutional disease factors.

The most searching diagnostic inventory of the case will reveal the presence or nonpresence of parenteral infection. If present, it immediately assumes importance as a causative or related factor in the alimentary disorder.

In this connection it is important to re-

member that ear and especially mastoid infection, and infections of the accessory head sinuses, head the list of the parenteral infections which definitely can and very frequently do affect the gastro-intestinal tract.

If a parenteral infection is not present, the case is quite simplified. It is an enteral disturbance. The causative factor lies in the food itself or in some metabolic disorder or in some type of enteral infection, either bacterial or protozoan.

If the disturbance is non-diarrheal, and consists mainly in rejection of much of the food, or in constipation, two things may be wrong. The volume of food given may be excessive, or the composition of the food itself may be at fault in some of its components, or buffer values, or hydrogen ion concentration.

The fat component generally plays a big role in this disorder. Elimination of much of it from the food goes a long way toward the correction of the disorder.

The buffer value of the food and the p^H of the mixture given are other factors which must receive consideration in this type of disorder.

If vomiting, generally unaccompanied by diarrhea, is persistent and is the principal symptom, a deeper seated disorder, probably metabolic, must be thought of. It may have its origin in the liver, pancreas or kidney. Cerebral conditions must be ruled out.

This type of alimentary disturbance is generally afebrile.

If the disturbance is diarrheal and parenteral infection has been certainly ruled out, the disorder is enteral, and the cause lies either in the food itself, or there is an enteral infection in the nature of a bacillary invasion or protozoan infestation. Decomposed food, most commonly milk, is generally responsible for the former condition. Infection with the Flexner or Shiga's bacillus, or abnormal colon flora accounts for many of the bacillary types. Ameba and other forms of protozoa account for the more infrequent type of protozoan infestation with resulting diarrhea.

In all three conditions—the parenteral infection, the entero-catarrh or intestinal intoxication, and the bacillary dysentery—diarrhea and fever are the outstanding symptoms. The behavior of these two clinical symptoms to treatment, for example, complete starvation with liberal administration of fluid, gives a valuable mechanism of differentiating entero-catarrh or intestinal intoxication, not due to parenteral infection, from one that is due to this cause or is bacillary or protozoan in nature.

Upon complete starvation and the free administration of fluids, the temperature will fall in even the most severe intestinal intoxication and there will be marked, if not complete, improvement in all gastro-intestinal symptoms.

This does not occur in the diarrheal conditions due to parenteral infection or those due to bacillary infection, the true enteritis. No appreciable change or improvement in symptoms will occur.

Under no circumstance must this starvation test be carried beyond forty-eight hours. No degree of starvation will cause a decline of temperature in bacillary dysentery and in most of the parenteral infections. There may be some let-up in the diarrhea, but any improvement noted is very slight.

It is characteristic of bacillary dysentery and some forms of protozoan dysentery, notably amebic, that blood appears early in the stool.

Blood in the stool is not an infrequent accompaniment of many parenteral infections. It is characteristically absent from even the worst forms of acute intestinal intoxication.

The differentiation between true enteral infectious diarrhea and the diarrhea due to parenteral infection, is difficult, and one is often puzzled as to which condition really exists. Only the most painstaking physical inventory and establishment of the parenteral focus of infection will settle the question.

In the enteral diarrheal disturbances it is important to recall the location of the pathological bowel changes.

In enterocatarrh and intestinal intoxication, all bowel pathology is confined to the small bowel from the duodenum to the cecum.

The lesions are seldom deeply seated or destructive to the bowel lumen and its secretory structures. They are more in the nature of intense toxic irritations.

In the infectious diarrhea, the lesion may be distributed throughout the bowel; but in the majority of cases are predominant in the lower part of the latter.

The reaction to the food components is different in both conditions. Sugar is badly tolerated in all forms of enterocatarrh.

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and intestinal intoxication. It is subject to a vicious and most rapid disintegration.

The products which reform are highly toxic. Along with this intolerance goes also an intolerance to fat. Only protein is well borne, and has even the effect of being a powerful agent to curb the mischief which is going on.

All the components are well borne in infectious diarrhea. The less useful is possibly protein, and to some extent fat. Carbohydrate is excellently borne in infectious diarrhea and should by all means be adequately contained in any food mixture used in this condition.

The situation in parenteral infection is similar, and even more favorable as regards tolerance to food components than it is in infectious diarrhea.

There is strictly no lesion in the gastro-intestinal tract.

The digestive functions are essentially intact and there is no reason why food should be withheld, or the mixtures given modified to any considerable extent.

Any one of the three conditions—enterocatarrh, or intestinal intoxication, if repetitional; infectious diarrhea, if badly treated; or parenteral infection, if persistent or undiscovered—will lead to the wellknown state of athrepsia.

The practical problem in athrepsia is the complete loss of tolerance to all food components, and with it, the loss on the part of the organism to adequately utilize water for its cellular functions.

There lies back of it all a serious derangement of the cell structure itself, largely concerned, no doubt, with its protein structure and its mineral content.

Some of the facts, reflections and theories mentioned, permit, I believe, a practical application to the problem of feeding in alimentary disorders, and furnish the explanation for the use of various celebrated food mixtures now so successfully and generally used.

It is notorious that cow's milk mixtures, or milk from other animals if rich in fat and high in buffer value, will not agree in the infant troubled with persistent vomiting.

The situation promptly becomes peaceful if you resort to fat-free milk and reduce the buffer value of the milk by the addition of a suitable acid, preferably lactic, or give a milk naturally containing this general composition and characteristic.

Buttermilk mixtures and the acid milks such as lactic acid milk or hydrochloric acid milk meet these requirements, and are successfully used in these conditions.

In enterocatarrh and intestinal intoxication the choice of food mixture will be one containing much protein and very little carbohydrate and fat. Such a mixture will be inimical to excessive bacterial action in the small bowel, with resulting fermentation and carbohydrate breakdown and will favor the development of firm stools, thus checking the fatal dehydration.

Protein milk, buttermilk and skimmed lactic acid milk, without carbohydrate, or with moderate additions, will meet the demand for this type of disorder and will, in surprisingly short time, restore conditions to normal and again permit, with safety, the liberal use of the indispensable carbohydrate component.

The treatment of infectious diarrhea and of diarrhea due to parenteral infection is quite similar as regards choice of food mixture.

In infectious diarrhea, the seat of the disorder is seldom in the small bowel. The same is true of many forms of dysentery due to protozoan infestation. In parenteral infection the active cause of the diarrhea is extraneous to the gastro-intestinal tract.

For this reason there is no decided reason for making much change in the food mixture and there is particularly no reason for markedly diminishing the carbohydrate component or withholding it altogether. It is not desirable to produce a firm stool; for this reason, high protein content of the food is not desirable.

The buttermilk mixtures and full strength lactic acid milk with liberal carbohydrate additions will prove to be very useful mixtures. The malt soup of Czerny-Keller is also very good.

The results are not so favorable with plain milk mixtures, and in infectious diarrhea very unfavorable with too early or injudicious use of solid foods.

The athreptic infant presents the same problems, depending upon what type of enteral or parenteral disturbance he has, with this difference, however, that his tolerance line for any food component is at a very low ebb and his tissues seemingly lose the ability to utilize water.

It is well to keep the volume of food low. In exchange for this caution, one can, how-

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ever, give very high carbohydrate percentages and high protein content in the food mixture.

No artificial food mixture will, however, give as certain and safe a result in the athreptic case as will exclusive breast milk feeding.

The adequate administration of fluids in any alimentary disturbance accompanied by vomiting, or diarrhea, or both, is of the greatest importance. The gravest and most fatal disturbance in the acid-base equilibrium of the tissues will occur if this is not done.

In the dangerous stages of the disease it is of far greater importance than the administration of any food component.

Careful consideration of the fundamental factors mentioned and their correlation to the problem of acute alimentary disorders, will, I believe, enable one to satisfactorily analyze and accurately differentiate such disorders.

It will furthermore give clear cut indications for treatment which will give results that cannot only be confidently expected, but can definitely be predicted.

DISCUSSION

Dr. Frank Van Schoick (Jackson): I should like to have the doctor tell me the reason for the presence of blood in a parenteral infection. I can very well see the cause of the presence of blood in an enteral infection. Why there should be blood in the parenteral infection is a thing that puzzles me.

D. F. W. Schlutz (Minneapolis, Minn.): We have the impression that in the parenteral infection, if there is blood present, there possibly has been, to some extent, an invasion of the intestinal tract by the same organism that is present in the original focus of infection. I think there has been some bacteriological research done on that. I cannot recall the author or the time or the place where it has been done, but I think there has been definitely shown the connection between the mastoid infection, which has been stressed by the St. Louis school, and a similar organism in the intestinal tract. There is a type of the colon group that I think is quite similar in both conditions. I don't know how correct that is, but if that is a fact that can be attested by further experimental work, it is rather interesting. It bears out, I think, what I said at first, that we have the feeling when we do have blood there is that added complication that the focal infection, the parenteral infection, has, among other places, extended to the bowel tract. I might say, however, in my experience, at least, the appearance of blood in the stool with a parenteral infection is a comparatively rare thing.

I always have the feeling, when I do find much blood in the stool in an acute alimentary disorder, that I am dealing with bacillary dysentery. You do have the parenteral infection extremely severe. It seems to be more the mastoid type of infection than any other. That is our experience at Minneapolis, and I believe that bears out what they have found at St. Louis. I don't know why we see more of that condition than we did formerly. I am in a rather fortunate situation in this way, that on account of my age and the length of time I have been in pediatric practice I have passed through the stage when we did not have these things and got our babies well, to the stage where now they talk about it so much and they seem to have a good deal of it. I don't know what has happened. Something has happened in between there.

Formerly we lost few cases, yet we did not operate on the mastoid. Now we are seemingly compelled to resort to radical procedure. I cannot give an explanation for that. However, it seems to be true that we do not have peace in some of those cases and do not seem to save those cases unless we do operate. I am extremely conservative on that point. By no means am I ready to fully endorse the extreme ultra-radical realm that operates on sight, as it were.

Dr. A. Joseph Himmelhoch (Detroit): Parenteral and enteral infections are the same thing, perhaps. You said that all the parenteral infections are above the neck and are responsible for the diarrheas. Here we have a path which is directly connected with the gastro-intestinal tract. If it is in the mastoid there is drainage through the Eustachian tube. Why isn't it entirely conceivable that, especially with the factor of blood in the stool, the thing is actually of enteral infection and not secondary to a parenteral infection?

Another question that I should like to ask is the incidence of bacillary dysentery in Minneapolis. Do you routinely culture the warm stool and attempt to recover the bacilli? If so, how often are you successful? In Detroit we have had a number of cases of what should have been bacillary dysentery clinically, with no recovery of organism from the stool.

Dr. F. W. Schlutz (Minneapolis, Minn.): You have the infection from these regions down. You really have a bacillary, parenteral and enteral. That combination commonly exists. We have comparatively little bacillary dysentery now. As to the difficulty in trying to recover the organism, I had an experience with a case that was sent up from El Paso, Texas. By the most exhaustive bacteriological study on the stool were we able to identify the organism. I was confident that that was what it was. The child made a remarkable recovery. We do not have it very much. We frequently have difficulty in recovering or demonstrating the organism that should be present. We do not, for instance, have much of the Shiga type of bacillus.

Dr. F. Miner (Flint): I should like to take this opportunity to thank Dr. Schlutz. I can safely say that no branch of medicine is more abused than in the treatment of enteritis in children by the use of cathartics and patent foods.

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THE CLINICAL AND LABORATORY DIAGNOSIS OF ACUTE PANCREATIC NECROSIS*

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One of the most difficult upper abdominal conditions to diagnose is acute pancreatic disease. The diversified character of the symptomatology and the similarity of its clinical course to several other upper abdominal diseases renders it unusually elusive. To recognize acute pancreatic necrosis from purely clinical symptomatology is very difficult even in the hands of the experienced observer, yet it is not impossible. In the past years, innumerable methods have been introduced which deal largely with the determination of the functional activity of the pancreas, some of which have augmented the clinical symptoms and together have proven to be of great aid in establishing a diagnosis of acute pancreatic necrosis with any degree of certainty.

In Germany, where most of these methods have been advocated and practised, reports indicate that it is possible to establish a preoperative diagnosis in almost 85 per cent of all cases (Körte, Muller, Nordmann, Guleke, Dietrich). In contrast to such excellent results obtained by our German colleagues, we find that in other countries, particularly in the United States, the percentage of preoperative diagnosis of this condition has been less satisfactory. Some of our authors have pointed out that pancreatic necrosis is more prevalent in Germany and that both the surgeons and clinicians have a great deal of experience in its diagnosis and treatment. While that statement, no doubt, is true, yet we feel that the chief reasons for our failure to establish a preoperative diagnosis of acute pancreatic necrosis more often are as follows:

(1) We very seldom think of the pancreas as a source to produce an acute abdominal condition.

(2) We aren't universally employing the modern clinical and laboratory methods as practiced in practically all of the German clinics in either establishing the diagnosis of acute pancreatic necrosis or excluding it in cases where such a condition is suspected.

That a diagnosis and particularly an early diagnosis is essential to avoid a high mortality is indicated by reports of Körte and Stephan, who have shown that when the patients are operated on early, the mortality ranges between 45 and 55 per cent but when operation is performed 2 to 3 days after the onset of the disease, the mortality is almost 100 per cent. Contrasting the mortality of the United States and Germany we were very much surprised to find that in the former the mortality still ranges between 80 and 90 per cent, while in Germany it has been reduced to 50 to 60 per cent. It is for this reason that we are presenting this paper with an effort to introduce the most common clinical findings and laboratory methods of investigation which have proven to be almost pathognomonic of acute pancreatic necrosis.

Clinically, the patient presents a history of minor attacks of pain coming on during or immediately after a meal which have been diagnosed either as gall-bladder disease or stomach trouble. These attacks may date back for a number of years. The severe attack comes on suddenly and as Guleke points out, usually in middle-aged obese individuals after or during a rich meal or indulgence in excess drinking of alcoholic beverages. Although it is true that acute pancreatic necrosis is usually found in middle-aged or aged individuals, yet we must say that in our experience it is just as frequent in younger individuals. Our youngest patient was a 15 year old girl and Guleke reports a typical case of acute pancreatic necrosis in a 3 year old child. While obesity and alcohol are definite predisposing factors in the production of acute pancreatic necrosis, yet we feel that it is just as common in patients who are thin and not exposed to habitual drinking of alcohol.

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PAIN A MOST CONSTANT SYMPTOM

The most constant symptom of acute pancreatic necrosis is pain. It usually localizes, at the onset of the attack, in the epigastrium and later increases in intensity very rapidly. The one thing which characterizes the pain as "pancreatic pain" is not the type or degree of severity but rather its radiation. Most observers agree that the pain radiates to the left hypochondrium along the left costal margin towards the left shoulder and kidney region. The pain, although at times intermittent and mild at first, later becomes continuous and very severe. Accompanying the pain there is usually nausea and vomiting.

The appearance of the patient is not always characteristic. In severe cases the patient shows all the signs of shock, the face is very pale and at times slight cyanosis of the lips may be noted. These findings are, without a doubt, due to the poisonous effect upon the body through the toxic products produced by the necrosis of the pancreas, as shown by Guleke and Bergmann through a series of experiments on dogs.

The pulse is at first regular, later becoming weak and thready; the temperature is either normal or slightly elevated, in severe cases subnormal. The abdomen is at first slightly distended, usually limited to the upper part of the abdomen. The distention and tenderness of the abdomen, however, is never so severe and marked as found in cases of peritonitis particularly due to a perforated ulcer of the stomach. Katsch calls attention to the Head's zone which is always found and characteristic of acute pancreatic necrosis. This zone runs from the epigastrium towards the left under the left costal margin and it consists of an area of skin sensibility produced by crossing a needle back and forth from the center of the epigastrium along the left costal margin. We also have been able to demonstrate this finding in most of our cases of pancreatic necrosis. In addition Körte finds a resistant area in the upper abdomen which entails the normal anatomical position of the pancreas.

LABORATORY INVESTIGATION

Far more important than the symptoms and clinical findings in the diagnosis of acute pancreatic necrosis are the laboratory methods of investigation. It is recognized by all observers today that in order to establish a diagnosis with any degree of certainty, one must determine the chemical function of the pancreas. In the past 20 years, various methods have been introduced which largely dealt with the determination of the changes of the internal and external secretions of the pancreas. Some of these methods, such as the determination of glycosuria and hyperglycemia have been discarded, for they have proven to be too uncertain. Only 20 to 30 per cent of the cases of pancreatic necrosis show an abnormal amount of sugar in the urine and blood. The characteristic changes in the feces which usually take place in pancreatic necrosis are of no practical value in establishing a diagnosis of pancreatic necrosis as in the latter case there is considerable difficulty in obtaining a stool specimen. What was needed were methods which would enable us to establish a diagnosis in cases where the pancreas was only mildly involved and particularly in surgical conditions of the pancreas where a quick and exact method was necessary to determine whether there was an indication to operate. The methods advocated by Wohlgemuth in determining the amount of diastatic ferment in the urine and that of Rona in determining the lipolytic ferment in serum, answer the above requirements.

The determination of the diastatic ferment in the urine according to Wohlgemuth is based on the observation that normally the ferment is present in the serum and urine in certain quantities. When, however, we are dealing with a condition of the pancreas such as acute pancreatic necrosis where there is a destruction of pancreatic tissue, there follows an absorption of the diastatic ferment and thereby an increase in the blood and urine in abnormal quantities.

Already in 1863 J. Cohnheim was first to show and isolate the ferment in the urine but not until 1908 when Wohlgemuth described his method of determining the quantitative value of the ferment in the urine was the method recognized as of diagnostic value in establishing a diagnosis of pancreatic necrosis. Löffler regards the value of the diastatic determination in the urine in pancreatic disease equal in importance to the determination of the icteric index in liver disease.

In the laboratory, the method is carried out in the following procedure as recommended by Wohlgemuth:

(1) A series of 10 test tubes are arranged on a test tube stand.

(2) One c.c. of the urine to be examined

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is then placed in test-tubes 1 and 2.

(3) One c.c. of 1 per cent salt-solution is then placed in all the test tubes except the first one.

(4) The contents of the second tube, containing 1 c.c. of urine and 1 c.c. of salt-solution, are thoroughly mixed with a pipet and 1 c.c. of this mixture is removed and placed in the third test-tube. The process is repeated in the third tube and 1 c.c. of the mixture is removed to the fourth tube, and so on until it reaches a value of 511/512 in the last tube.

(5) Two c.c. of a fresh 1 per cent starch solution is then added to each test tube.

(6) All the test tubes are then placed in a water bath for twenty minutes, kept at a constant temperature of 38° to 40°.

(7) The tubes are then cooled and to each test tube is added several drops of a N 1/50 iodin solution.

(8) The addition of the iodin causes the appearance of different colors in the test tubes; the tube showing the first appearance of the color "blue" is taken as the borderline and the calculation of the diastatic value is made from the tube immediately before it.

The following table and explanation will illustrate the mechanism and interpretation of this method.

	Amount of NaCl after mixture	Amount of urine after mixture	Starch solution	Solution	Color	D.U.
1.	0 c.c.	1 c.c.	2 c.c.	1/50	yellow	2
2.	½	½	2	1/50	yellow	4
3.	¾	¼	2	1/50	red yellow	8
4.	⅛	⅛	2	1/50	red violet	16
5.	10/16	1/16	2	1/50	blue	32
6.	31/32	1/32	2	1/50	blue	64
7.	63/64	1/64	2	1/50	blue	128
9.	255/256	1/256	2	1/50	blue	512
10.	511/512	1/512	2	1/50	blue	1024

The principle of the method is based on the fact that normally the diastatic ferment will split the starch to some form of dextrin and upon the addition of iodin the color will turn from yellow to red, showing that the ferment was present and splitting of the starch has taken place, for if the diastatic ferment was absent the "blue" color will always appear upon the addition of iodin to starch showing that the starch was not split.

In the above example of a normal urine, test tube number four was the last one to show the presence of the ferment and starch splitting. This tube is therefore taken as the one from which the amount of diastatic ferment is to be calculated. The last six tubes show a blue color indicating the absence of the ferment and therefore no starch splitting. When we are dealing with an abnormal urine in which the diastatic ferment is present in large quantities, the splitting of starch will continue to take place lower down in the series, thereby increasing the diastatic unit.

DIASTATIC UNIT

Wohlgemuth defines a "Diastatic Unit" as that amount of starch solution which will be split up by 1 c.c. of urine under definite conditions such as time and temperature. In the above example the calculation is made as follows:

⅛ c.c. urine splits 2 c.c. of starch solution.

1 c.c. urine splits 8x2 or 16 D.U.

In normal individuals the value of the diastatic ferment ranges between 8 and 64 D.U. Most authors agree that anything above or below the above figures is to be regarded as pathologic.

With this method as advocated by Wohlgemuth, we examined 237 cases with various abdominal conditions. Of these we found 15 cases with acute pancreatic necrosis of which 11 were operated on. The diastatic reaction was always positive in all 15 cases, the diastatic value varying between 320 and 2000 units. After the recovery the reaction was always repeated and we found normal results in all cases.

Particularly interesting are three cases which we had an opportunity to observe for several weeks during their attacks. We noted that during an attack the diastatic value always increased (600 units to 1000 units), and gradually reaching a normal value after the attack has subsided.

In one case after an operation for acute pancreatic necrosis, the patient was observed on several occasions with a typical clinical picture of acute pancreatic necrosis and yet the diastatic value in the urine always remained within normal limits. Of course we are unable to say definitely that we were dealing with a recurrent acute pancreatic necrosis.

In many cases of severe cholecystitis and cholelithiasis, we also found a slight increase of the diastatic value in the urine without being able to demonstrate even a mild pancreatic necrosis. Most of these

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cases showed some form of obstruction either in the papilla or in the bile ducts which led to a retention of the pancreatic secretions, thus causing an entrance of the pancreatic ferments into the blood and finally appearing in the urine.

In two cases we found a definite increase of the diastatic value in the urine (320 units) without pancreatic necrosis. One case was tuberculous peritonitis which was operated; the other case was an acute pelvic peritonitis. We are at a loss to explain the increased diastatic reaction in these cases.

In the remaining cases of acute and chronic abdominal condition, the diastatic value was always normal.

The diastatic value varies in the same individual, but the variation is always within normal limits. Wohlgemuth recommends the examination of several specimens of urine as he has shown that there is a slight increase in the diastatic value in fasting individuals, while after a meal there is a decrease but after 3 to 4 hours there is a gradual increase to normal again.

Skoog emphasizes very strongly that the temperature must remain between 35° and 40°. He has shown that when the temperature is below 30° or above 40° the results are valueless. He has also shown that concentration or dilution of the urine has very little effect upon the results.

Roseno found that in very severe cases of acute pancreatic necrosis, where the entire pancreatic gland is destroyed, no diastatic ferment is found in the urine.

It is further to be noted, as indicated by Schmerel, that in nephritic and diabetic patients, the diastatic value in the urine is always decreased. This fact should always be taken into consideration when the urine of such a patient is examined for diastatic reaction.

The determination of the pancreatic lipolytic ferment in the serum was first advocated by Rona in a series of excellent experimental observations on pancreatic ferments. He has shown that the serum of normal blood contains lipolytic ferments which may be destroyed and rendered inactive by the addition of a chemical agent, such as atoxyl, while the pancreatic lipase, on the contrary, is destroyed and becomes inactive when quinine hydrochloride is added while it is resistant to atoxyl.

He also makes use of the fact that the number and size of the drops of a known volume of fluid is dependent upon the surface tension of that fluid. He has shown that the number of drops is in inverse proportion to the size of the drops which is directly proportional to the surface tension.

In the laboratory the method is carried out in the following manner:

(1) To a liter of distilled water, 5 drops of a freshly prepared solution of tributyrate is added and shaken continuously for one hour and then filtered.

(2) About 25 c.c. of blood is removed from the suspected patient and centrifuged for twenty minutes; the serum is removed in a separate container.

(3) A buffer solution is then prepared consisting of 1 c.c. of primary sodium phosphate and 14 c.c. of secondary sodium phosphate. This mixture should give a PH value of 7.6.

(4) Two separate mixtures are then prepared.

(a) Three c.c. serum
" " tribut. solution
" " buffer "
One " atoxyl

(b) Three c.c. serum
" " tribut. solution
" " buffer "
One c.c. distilled water.

(5) An equal and known volume of each mixture is then taken up in a Rona tube and the number of drops counted after 5, 30. 60 and 90 minutes.

Explanation:

If we mix 3 c.c. of serum with 3 c.c. of tributyrate solution the following reaction takes place. The normal lipolytic ferments present in the serum will split the tributyrate solution causing the surface tension to increase and thereby an increase in the size and a decrease in the number of drops present in a known volume of the mixture. So if we had counted 120 drops in a known volume of serum before adding the fatty solution, it will have about 90 drops after adding the tributyrate solution. If to the mixture of 3 c.c. serum and 3 c.c. tributyrate solution, 2 mg. of atoxyl is added, we find that the number of drops in the same volume will remain the same in the course of 1½ hours because atoxyl destroys the lipolytic ferments present in the serum, the fatty solution will not be split up and the surface tension will remain the same.

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	Before adding Tributyrate	After adding Tributyrate solution		
		60	30	90
Normal Serum Tributyrate solution	120	102	102	100
Normal Serum Tribut. Sol. 2 mg. Atox.	120	119	119	119

If, however, we are dealing with an abnormal serum of a patient suspected of acute pancreatic necrosis, we find that the number of drops in the same volume of mixture will still decrease in spite of the addition of 2 mg. atoxyl, showing that there must be a lipolytic agent present in the serum which is foreign and one which is resistant to atoxyl. It is apparent that this foreign lipolytic ferment continues to split the fat solution, the surface tension is increased and the number of drops is decreased. The only lipase known to resist atoxyl is the pancreatic lipase, which is present in the blood only when the pancreas is acutely diseased.

	Before addition	After addition		
		30	60	90
Abnormal Serum Tributyrate Solution	120	105	102	100
Abnormal Serum Tributyrate Solution 2 mg. Atoxyl	120	108	100	96

The difference in the number of drops varies with different cases but for practical purposes, most observers agree that, if at the end of 90 minutes a difference of at least 8 to 10 drops is noted, the case under consideration is to be regarded pathological.

With this method we examined 80 cases of various conditions of the abdomen of which 8 cases had an acute pancreatic necrosis. In all of the 8 cases the reaction was positive; in the remaining cases, negative. It appears that this method is more exact and finer than that of Wohlgemuth, nevertheless we are using the diastatic reaction almost exclusively at present for it is more simple and it doesn't require much time. However, we use Rona's method in cases where the diastatic reaction is normal and yet a pancreatic necrosis is suspected. The method is used only as control.

Several authors have noted and reported cases of pernicious anemia where there was a marked autolysis of the red blood corpuscles and the setting free of lipolytic ferments which are also resistant to the addition of atoxyl. It is therefore essential to rule out pernicious anemia in patients suspected of pancreatic necrosis. Fortunately, the two diseases very seldom occur simultaneously.

CONCLUSION

Both laboratory methods have, in our experience, proven to be very dependable. For practical purposes, however, we are much in favor of Wohlgemuth's method to determine the diastatic value in urine for it is more rapid, simple and even the inexperienced individual can carry it out with little instruction. It is further to note that in our experience as well as that of other observers, no absolute relationship can be established as to the severity of the disease from the strength of the reaction. We have seen, not infrequently, that in mild cases of acute pancreatic necrosis, a much higher diastatic value is found than in severe cases, and vice versa is also true. The reactions only show that we are dealing with a pancreatic disease, but as to whether the case is operative or not, we must also take the clinical symptoms and findings into consideration.

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THE SPHENOPALATINE TEST

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The sphenopalatine test differs fundamentally from tests made with the microscope, the test tube, or the X-ray, this difference lying in the fact that the patient gives the answer—the patient, not the doctor, who reads the dial. It is like other scientific tests, however, in demanding that, if the results are to be trusted, all possible precautions must be taken to guard against error. The object of this paper is to go over some of the most necessary precautions in applying the sphenopalatine test in order to avoid faulty conclusions.

Briefly the author's technic is as follows:

Armamentarium: an applicator, absorbent cotton, adrenalin, and butyn. The applicator is of aluminum, and slender, with about a centimeter of the handle bent to a right angle, and about two centimeters of the tip subjected to heat for pliability. The cotton should be of long fiber; the adrenalin, 1/1000; and the butyn a 50% aqueous solution.

A pinch of cotton is wound upon the tip of the applicator into a smooth, compact spindle about five millimeters in diameter at the center. This is dipped into the adrenalin and squeezed dry between the forefinger and thumb so as to flatten it in the same plane with the bent handle. At the same time the tip is bent to an angle of about thirty degrees in this plane. Two drops of butyn are added, and the applicator is now ready to be placed.

Standing on the right side of the patient, with the left forearm resting upon the patient's head and the left forefinger slightly raising the tip of the nose, the operator introduces the applicator, coaxing it along the floor of the nose or wherever its passage is found to be easiest, to a depth of about two and three quarter inches, when it will be felt to come into the open space of the naso-pharynx. The curved tip is now rotated outward to an angle of about forty-five degrees, when it makes contact with the pharyngeal wall. It is left in this position for about five minutes, close watch being kept during this time to see that contact with the wall is continuous, when anesthesia of the sphenopalatine ganglion should be complete.

Caution: During this process close observation should be made of an untried patient and should any pallor, nausea, or other untoward symptom supervene, the test should be immediately discontinued.

In making this test it should be remembered that we are abandoning for the time the shot-gun approach, and using an instrument of precision. With our customary medical procedure of examining a number of symptoms *en masse* and applying therapeutic measures *en masse* it is well-nigh impossible to determine with scientific accuracy the effect of individual factors. The sphenopalatine test, on the other hand, lends itself to the examination of one factor only, which, indeed, is the essence of the scientific approach: the consideration of only one factor at a time—no more.

The one factor examined in the sphenopalatine test is excess efferent current routed via the sphenopalatine ganglion. The test is based upon the *theory of pathological currents*, or, in its biological aspect, the *hypothesis of current energy*. This theory postulates that the *efferent* nerve currents flowing out from the brain and being distributed radially to all parts of the body to "motivate and stabilize the various physiological functions,"[1] may upon occasion be produced and distributed in abnormal quantum, and that whenever this is the case the various functions which are being motivated will be overmotivated or undermotivated and converted into dysfunctions. In other words, efferent currents in excess, registering in this tissue or that, may and do engender and motivate dysfunctions, the particular kind of dysfunction depending upon where the excess currents are registering. Thus, an excess current registering in the eye produces a different sort of dysfunction from one registering in the sciatic nerve; an excess current registering in the heart produces a different kind of dysfunction from one registering in the lumbar muscles. But in any case the dysfunction engendered, whether it be glaucoma or sciatica, angina pectoris or lumbago, is engendered by excess efferent currents, and motivated by such excess efferent currents, and must cease when the motivating currents are withdrawn. It is these excess efferent currents that are known as *pathological currents*. They differ from normal efferent currents quantitatively, but not qualitatively. Stated in the form of an equation: As efferent currents in normal quantum are to

*Dr. Hiram Byrd was educated at the University of Georgia Medical School where he obtained his M.D. degree in 1902. He was director of the Department of Hygiene, University of Mississippi, 1919-1920; Director of the Department of Hygiene, University of Alabama, 1920-22. In 1915 he made a device for fighting citrus canker which was adopted by the United States Government. Dr. Byrd's specialty is Eye, Ear, Nose and Throat. The doctor is at present associated with the Jefferson Clinic, Detroit, in the capacity of research worker.

physiological functions, so efferent currents in abnormal quantum are to dysfunctions.

Since, according to this theory, local dysfunctions are engendered and motivated by efferent currents, in order to arrest such dysfunctions, it is only necessary to intercept the motivating efferent current before it reaches the locus of distress. In other words, to arrest sciatica, asthma, angina pectoris, it is only necessary to turn off a switch somewhere along the current path between the locus of distress and the brain.

Now that is exactly what the sphenopalatine test is—it is the turning off of a switch in the presence of some dysfunction to see if the dysfunction or symptom can be thus arrested. From the patient's standpoint, *we are trying to arrest the symptom*, but from the standpoint of research, *we are trying to determine whether the efferent current that is motivating the symptom is routed via either sphenopalatine ganglion; and if so, which, the right or the left.*

To illustrate this, let us take an actual case. Case No. H955, Jefferson Clinic, gives a history of having been operated upon a year ago for right inguinal hernia. Ever since that time he has had distress in the right inguinal region, a good deal of pain and some soreness. When he was recently referred for the test, the left sphenopalatine ganglion was anesthetized, whereupon the pain and soreness immediately disappeared. He could now bend, stoop, and go through all sorts of contortions without bringing on a trace of the pain. On his chart it was noted: "The inguinal distress caused by efferent currents routed at present adown the left trigeminal nerve, and via the left sphenopalatine ganglion."

Two cases of sciatica from the records of the Jefferson Clinic represent another phase of the test. The one (H3260) came into the office walking with great difficulty. His sciatica had persisted constantly for six months. The left sphenopalatine ganglion was anesthetized, and in some five minutes or so the pain was entirely gone, so that the patient could now walk, bend, and twist his body without provoking so much as a twinge. The test told us that the actuating current was routed down the left trigeminal nerve, via the left sphenopalatine ganglion. (Here it may be noted that rheumatoid symptoms are more commonly routed adown the left ganglion, while asthma is more commonly routed adown the right.)

But all cases of sciatica do not respond as happily as this one did. In the other case, F667, for a minute or two the patient thought his pain was getting better, but by the time the test was completed (five minutes) the sciatic pain was as acute as before. The test was now applied on the right side, but with no better results. It was obvious that the record on his chart would have to be that the current actuating the sciatica was not routed via either sphenopalatine ganglion.

THERAPEUTICS

But the sphenopalatine test may be made to serve therapeutic purposes. Experience has shown that after the actuating current is once intercepted, in some instances it never returns. This is true particularly in the case of lumbago. It is the rule rather than the exception that anesthetizing the left sphenopalatine ganglion in the presence of lumbago immediately and completely relieves the pain, and, furthermore, it rarely returns. This procedure, since its introduction at Eloise a few months ago, has become standardized there in the treatment of lumbago. Dr. Saunders informs me that it is an eminently successful therapeutic device in fully three-fourths of the cases.

In other cases the procedure has to be repeated once, twice, or even three or more times. The case of sciatica above mentioned (H3260) was completely and permanently relieved after three anesthetizations.

WHEN ALCOHOL INJECTION IS INDICATED

In still other cases the ganglion may be anesthetized and the symptom arrested again and again, but still it persists in returning with little or no improvement. In this type of case, after a sufficient number of tests, always followed by temporary relief, it is expected that injecting the strategic ganglion with alcohol will make the relief permanent. Thus the sphenopalatine test is our guide as to when an alcohol injection of this ganglion is indicated.

A notable case of this kind was one of chorea (reported in Archives of Otolaryngology, February, 1928) involving the left arm and leg, and of some six years duration. It was found that anesthetizing the left sphenopalatine ganglion would give relief for four hours, but that the malady would always return. little or no better than before. At length, after a dozen or so tests,

always with uniform results, the ganglion was injected with alcohol, and the affliction was immediately, completely, and permanently relieved.

TESTING FOR DETOURS

When a sphenopalatine ganglion is anesthetized with butyn it is impervious to the passage of currents for three or four hours. If a symptom is arrested and returns in less than that time, it is obvious that the current has found some by-path to the locus of distress—in other words, it has *detoured*. A good illustration of this was in the case of Mrs. M.,[2] who had been confined to bed for several days with a rheumatoid distress involving the lumbar region and extending down the right sciatic nerve. The test applied to the left sphenopalatine ganglion gave what appeared to be complete relief. But the relief was very short-lived, the pain returning in one to two hours. Since the pain returned while the ganglion was still impervious to the passage of currents, it was obvious that the actuating current had established another path—had detoured the obstruction. It was not surprising, therefore, to find that subsequent attempts to arrest it through turning off the switch at the left sphenopalatine ganglion were unsuccessful. Once a detour is established, it is not worth while to make any further attempt to control a symptom by the sphenopalatine test.

Another type of detour presents itself—one that comes on more gradually. For example, a case of iritis was found to be completely relieved of its pain at the first anesthetization of the ganglion, and the relief lasted the full four hours. But in subsequent tests the relief was not quite so complete, and the return a little more prompt, till at last a stage was reached in which anesthetizing the ganglion gave no relief whatever. This has been observed in a number of cases, especially where the eyes and ears were involved.

Still another type of detouring has been encountered, as illustrated by the following case: Miss B. had asthma of several years duration. It was found that anesthetizing the right sphenopalatine ganglion during an attack gave complete relief. The test was repeated on several occasions, always with uniform results. At length, since no tendency to detour exhibited itself, the ganglion was injected with alcohol, in the expectation of complete and permanent relief, as in the case of chorea mentioned. The relief followed as expected, but lasted only a few weeks. The question arose as to whether the ganglion had prematurely opened up to the passage of currents or whether the currents had detoured the obstruction. The sphenopalatine test afforded a ready answer. If it were a case of the ganglion prematurely admitting the passage of currents, then anesthetizing the ganglion during an attack would relieve the asthma as before. But it was found that anesthetizing the ganglion now gave no relief whatever. This showed that the injection was still holding, but that the currents had detoured the obstruction.

TESTING ONE'S TECHNIC

The sphenopalatine test may be used to check up one's technic, as the following case illustrates: Chas. W., on the service of Dr. Ryerson, at Eloise, had asthma of twelve years duration. It was found that anesthetizing the right nasal ganglion during an attack relieved it entirely. After repeating this test several times it was decided to inject the ganglion with alcohol in the expectation of more permanent relief. But in a few days the asthma returned as before. The sphenopalatine test now arrested it again, showing that the injection with alcohol had been faulty. A second injection was made, but the asthma returned a second time and was again found arrestible by the sphenopalatine test, which showed that even the second injection had missed its mark.

This is an extremely important point, since these injections were made through the posterior palatine canal—a technic not supposed to miss the ganglion.

NEGATIVE CASES

Positive information may often be had from even negative reactions. In a case of Dr. Ryerson's, the patient was suffering from excessive lachrymation, even to the extent of excoriating his cheek. There are two paths by which the exciting current might reach the lachrymal glands: via the sphenopalatine ganglion, and via the ophthalmic nerve. The ganglion was anesthetized, but without effect upon the lachrymation. This told us that the exciting current was not routed via the ganglion at all, and it told us just as certainly that this current *was* routed via the only alternative path,

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namely, the ophthalmic nerve. Upon the basis of this test, but without any guiding precedent in the history of medicine, the ciliary ganglion was injected with alcohol, with the result that the lachrymation was immediately, completely, and, I might add, permanently arrested.

AUGMENTING SYMPTOMS

It is not to be inferred that the sphenopalatine test does no more than merely arrest a dysfunction or fail to arrest it. The sphenopalatine test is not an entirely innocuous procedure. In every case it redistributes the current energy of the organism, creating a region of lower current tension distal and higher tension proximal to the point of interception. Sometimes this raising of the tension on the proximal side results in the augmentation, or even initiation, of dysfunctions. For instance, Sluder[4] long ago observed that deep temporal headache was never relieved by anesthetizing the sphenopalatine ganglion, but on the contrary was frequently augmented, and sometimes initiated outright. The reason is obvious, since the deep temporal nerves arise in the proximal region where current tension is raised by applying the sphenopalatine test.

THE SPHENOPALATINE TEST AND BLOOD PRESSURE

That there is an intimate relationship between currents passing the sphenopalatine ganglion and the circulatory system has been already shown by the arrest of such circulatory dysfunctions as agina pectoris, tachycardia, and Berger's disease (Chester). Even more clearly is this relationship shown in the case of blood pressure. Not only has the sphenopalatine test been shown sometimes to reduce the systolic blood pressure as much as thirty-five mm. Hg. in ten minutes, but also sometimes to increase the systolic blood pressure as much as twenty-five mm. Hg. in the same time. Moreover, through the sphenopalatine test the synchronism heretofore supposed to exist between the systolic and diastolic pressures has been completely disproven—the same test raising one and lowering the other.

SCIENTIFIC USEFULNESS OF THE SPHENOPALATINE TEST

Enough has already been seen to indicate that when Sluder[4] in 1903 intercepted a passing current and arrested a remote dysfunction he opened a field of the first magnitude: the investigation of sensory, motor, secretory, respiratory, and circulatory dysfunctions by the interception of the efferent current energy that actuates them.

The scientific usefulness of the sphenopalatine test lies in the development of this field. It was with the sphenopalatine test that the field was opened. It has been through the sphenopalatine test that the unexpected extent of the field has been disclosed to view. The sphenopalatine test is the instrument *par excellence* with which the physician will survey this field and stake out his claims to scientific disclosures.

Moreover, it is the sphenopalatine test, above all things else, that will steer him aright in his thought processes as he explores this field. For instance, when the sphenopalatine ganglion is anesthetized and pain in the eye, as from traumatic keratitis, is relieved, the first impulse is to suppose that the path of pain from the eye to the brain is via the sphenopalatine ganglion. If this were true, anesthetizing this ganglion would of necessity put the eye in a state of anesthesia, and indeed, injecting the ganglion with alcohol would keep the eye under anesthesia for several months. That such is not the case can be demonstrated by merely anesthetizing the sphenopalatine ganglion of anyone and then testing the cornea for sensitiveness with a few fibers of cotton. It will be found that with the ganglion under full anesthesia the cornea on the anesthetized side is just as sensitive as its fellow of the opposite side.

Familiarity with the phenomena associated with the sphenopalatine test and due regard for their import would have saved McClintic[5] from the error that "eye pain is transmitted via the sphenopalatine ganglion, and not over the ophthalmic division of the V nerve," just as it saved Sluder,[6] the original author of that error, from continuing in it.

THE SPHENOPALATINE TEST DEMANDS CAREFUL APPLICATION

The sphenopalatine test is an instrument capable of the highest scientific precision, comparable to the microscope and the test tube; but it makes certain demands upon the intelligence of the one who would employ it with exactness. Cases cannot be treated *en masse*, but each one must be studied individually for a period and carefully interpreted in the light of the facts disclosed by the test, and in the light of

anatomy. Above all, the mental attitude of the physician employing this test should be one of scientific caution. He should take all possible pains to avoid misreading the reaction, and recording it as positive when in reality the reaction is negative or only partial. Partial relief, or relief that does not last the allotted four hours, should always be carefully distinguished, since it gives evidence that the actuating current is reaching the dysfunction via an alternative route. In these cases, of course, attempts to arrest the dysfunction by blocking the sphenopalatine ganglion prove fruitless.

Not the least of the possibilities of error lies in questioning the patient, for be it remembered. in case of pain, vertigo, nausea, tinnitis, and all subjective symptoms, the patient *reads the dial,* and must report of the reaction. Before applying the sphenopalatine test it is of course necessary to inquire carefully whether the patient is suffering from the symptom in question *at the time.* Above all, it is necessary to make the patient understand just what part he is to play in interpreting the test. Otherwise, quite unintentionally the patient may give answers that prove entirely misleading.

CONCLUSION

The virgin field for medical and biological advance opened by the sphenopalatine test can be developed only by the practising physician. In this field the experimental subject is not a dumb, narcotized animal, unable to report on pain and other subjective symptoms, but the conscious human being, with senses and sensibilities unimpaired, who alone can report on sensory dysfunctions. Thus the realm of pain and subjective dysfunctions, which makes up the bulk of medical practice, is destined to be investigated, not by the laboratory man, but by the physician; for he alone is authorized to treat human afflictions. It is the sphenopalatine test that gives the physician a method of scientific precision with which to investigate the vast realm of *pain,* that cannot be touched in the laboratory.

One might be shocked at the thought of experimenting with pain in the conscious human patient, until it is realized that the method consists, not of producing pain, but of removing its cause, while the pathway of pain is still open. so that the pain ceases because there is nothing to report.

When we experiment with sensory, motor, secretory, respiratory, and circulatory dysfunctions in human patients we follow an entirely different method from that followed in the laboratory on experimental animals. Instead of producing artificial dysfunctions, we wait until actual dysfunctions present for treatment, and then, by intercepting the excess efferent current that has overmotivated them and made them dysfunctions, we restore the normal balance and convert them into normal functions again.

It will require at least a generation's work, not by a few individuals, but by the profession generally, before the possibilities of this method of medical and biological advance will be explored. At present the sphenopalatine test provides the means whereby every physician may not only increase his efficiency as a physician, but may begin to assemble data of high scientific value in advancing the frontiers of medicine and biology.

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MEDICAL PROFESSION OPPOSED TO PORTER BILLS

The medical profession of the country, through the Journal of the American Medical Association, is opposing the bills introduced into Congress by Representative Stephen G. Porter, of Pennsylvania, governing the use of narcotic drugs, on the grounds that the Porter bills would set up a federal narcotic dictator.

"The legislation proposed is in complete harmony with the prevailing tendency to substitute a powerful bureaucracy in Washington for the authority of the states," declares an editorial in a recent number of the Journal A. M. A. "If the Porter bills become law, a physician, dentist, veterinarian or pharmacist authorized by a state to practice his profession cannot use narcotic drugs in connection with his work until a Washington bureau chief, under rules and regulations of his own making, says that he may. Autocrats of such a type have no place in the American scheme of government."

The editorial outlines the extensive power which would be given to the head of the proposed Federal Narcotic Control Board and urges physicians and all interested organizations to protest vigorously against the enactment of the proposed legislation.

"In the face of such a menace and with an understanding of the type of propaganda that will be behind the Porter bills, all the power that an intelligent people and particularly the medical profession can wield must be mustered to the defense of the right of physicians and related professions to practice for the good of man without further bureaucratic molestation," the editorial concludes.

—Science Service.

PERIODIC HEALTH EXAMINATIONS

ANNIE E. REYNOLDS, M.D.*
PORT HURON, MICHIGAN

The Woman's Benefit Association, a fraternal benefit society, with a membership of 250,000 women and children, has endeavored since 1923 to give each member a free annual physical examination.

In places where it has been impossible for the members to reach our examiners to receive this service free they are repeatedly requested to go to their family physician once or twice a year.

In 36 of the larger cities in the United States and Canada the Woman's Benefit Association has health centers open from 9 A. M. to 4 P. M. daily for the purpose of giving these examinations. Four of these are in charge of women physicians and the others in charge of nurses. Most of the nurses are registered nurses with years of experience in public health and hospital work. In several places the nurses have secured local physicians for one or two half days a week who examine the heart, lungs and pelvic organs. During each summer the members are brought in by the thousands to our Summer Camp on Lake Huron where each spends an average of two weeks. During this vacation the member is given her physical examination by a corps of physicians assisted by several trained nurses.

During the rest of the year a physician is sent from place to place through localities not served by health centers, spending one, two or more days in each town. Besides a lecture on periodical examinations and health subjects a temporary office is established and with the help of one or more nurses as many members are examined as possible. Three or four days before the doctor arrives a notice is sent out from headquarters to each member telling her of the opportunity of a free examination and stating time and place.

After weighing and measuring, each woman or child is told the normal weight for her height and age and how hers compares with this. If she is over or under weight, her diet and habits of eating are gone over to help her find and correct mistakes.

All symptoms of stomach or bowel trouble or digestive disturbances are searched for. If any abnormal condition is found or if she gives a history of pelvic trouble, she is referred to her family physician. If a surgical case is positively diagnosed an appointment is immediately made with a surgeon.

Goiters are referred to the family physician or to a surgeon with arrangements made for follow-up reports.

Every woman with abnormal blood pressure is sent to her family physician and promises are secured from her that she will see him at regular intervals and that she will follow his directions until he tells her that her blood pressure is normal. It is interesting to note how many women from 48 to 52 years of age have high blood pressure and how many who have had pelvic operations or ovarian trouble have low blood pressure.

If either sugar or albumin is found in the urine or any symptoms suggesting kidney disease are discovered, the patient is sent to her family physician. She is also told her condition and assured she can be helped with care. She is impressed with the importance of following minutely her physician's directions. A promise is also secured from her to have a urinary analysis made at stated periods throughout the remainder of her life.

Heart and nerve cases are sent to the family physician.

If any abnormal condition of the lungs is found or any physical condition noted that would indicate possible tuberculosis she is taken by a nurse to a T. B. Clinic, specialist or sanatorium to be thoroughly examined and watched, and cared for.

All eye, ear, nose, throat cases are referred to specialists.

If one has not been to her dentist within six months or if she has a diseased condition of the mouth she is referred to her dentist. Each woman sees the physician in private and she is allowed to tell her ailments or ask questions. Of course no prescribing is done, simply examining, abnor-

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mal conditions noted, reports taken and members not in first class condition are referred to local physicians. Each woman is given a card health report.

We realize some do not keep promises but we have follow-up reports on hundreds who do.

The condition and report of the member at her next examination show the interest and benefit received from this work, and through reports from physicians, surgeons and specialists we learn that our efforts have not been in vain.

One interesting point is that women in nearly every part of the United States and Canada where we have made these health surveys have their teeth examined and cared for often. Few acknowledge that they have not seen a dentist for six months. This would lead one to conclude that dentists have quite thoroughly convinced their patients of the need of regular examinations and prevention work.

These same women have not given this amount of attention to the rest of their bodies. The majority of these at their first examination seemed proud to state that they had not consulted a physician for years.

EFFECT OF DIFFERENT CARBOHYDRATES ON BLOOD AND URINARY SUGAR*

W. B. LEWIS, M.D. and R. P. BOND, A.B.
BATTLE CREEK, MICHIGAN

INTRODUCTION

Lactose and lactic acid preparations have been widely used in recent years to combat the toxemias resulting from the growth and development of unfavorable bacteria in the alimentary canal. This extensive use of lactose alone or lactose together with other carbohydrates, such as dextrin, has given rise to the question: Is there danger, by such use, of exceeding the carbohydrate tolerance of the individual and so doing harm? It was to obtain data on this question and to make a comparative study of a new commercial sugar, Beta Lactose,** that this work was undertaken.

It is interesting to note something of the historical development of our knowledge of urine and blood sugar.

As early as the year 1647 Thomas Willis recognized the presence of sugar in the urine of diabetics by its sweet taste. The presence of sugar in the blood of these patients was recognized by Dobson in 1775 (128 years after the recognition of the urinary sugar). His discovery was confirmed by Cullen the following year. Fifty-six years later, in 1831, Tiedemann and Gmelin[1] showed that sugar was normally present in blood after meals. In 1848 Claude Bernard[2] showed that it was normally present in the carbohydrate fasting animal, and in 1856 Chauveau asserted that sugar was a common constituent of the blood. Immediately following these important discoveries we have such men as MacGregor, Rollo, and Ambrosini giving us our first information of the dependence of glycosuria on hyperglycemia. Then tests for the assimilation limit for glucose and starch were developed by Schmid and Becker, Schiff, Lehmann, Frerichs, and others.

From this time on, we have an increasing volume of information regarding the blood and urinary sugar—how they are influenced by diet and starvation and by various forms of sugars. Methods of analysis also have undergone their evolution and to date we have various methods which are both simple and accurate and adaptable to the needs of anyone wishing to do work along this line, whether he be practising in a somewhat isolated region or in connection with a large hospital.

PLAN OF EXPERIMENTS

Our routine procedure for a glucose tolerance test[3] is as follows: 1. At 7:00 A. M. the bladder is emptied, the urine discarded, and a glass of water is taken. 2. At 8:00 A. M., one hour specimens of urine and fasting blood sugar are obtained. Patient is then given 100 gm. of pure dextrose dissolved in water with the juice of one lemon and made up to 200 c.c., also one glass of water. 3. At 8:30 A. M.,

*From the Department of Clinical Laboratories, Battle Creek Sanitarium.

**Produced by the Battle Creek Food Company, Battle Creek, Michigan.

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blood and urine specimens are obtained. 4. At 9:00, 10:00, 11:00 and 12:00 o'clock, blood and urine specimens are collected.

Each of two subjects was given this test in order to determine that they were normal in this respect. Then similar tests were carried out on each subject using 100 gm. of each of the following sugars: lactose, dextrin, a commercial mixture of lactose and dextrin, the new commercial sugar B-Lac, consisting principally of Beta Lactose, and sucrose or cane sugar.

Following this, sucrose was selected as the most common and widely used sugar to compare with the new sugar B-Lac. Increasing quantities were taken in an effort to determine the amount that would produce a positive test for sugar in the urine and increase the carbohydrates in the feces.

METHODS USED

Blood sugar was determined by Folin's[4] new ferricyanide micro method, using 0.1 c.c. of blood. Figures represent mgms. per 100 c.c. of blood. The principal objection to a much more frequent use of carbohydrate tolerance tests is the taking of the numerous blood samples, with its attendant pain and discomfort. By a very simple procedure we think we have removed this objection. Bv means of a good spring lance a fairly deep puncture is made in the thumb near the base of the thumb nail, nearly on a line with either side of the nail. The patient then grasps the thumb, with the thumb and forefinger of the other hand or a rubber band ⅛ to ¼ inch wide is wrapped around the thumb creating a venous stasis. If then downward pressure is made with the punctured thumb, the blood usually wells up abundantly and is easily collected in the capillary pipette. In our experience the thumb is much more convenient and easily manipulated than the ear. If the excess blood is lightly wiped off, bleeding usually stops at once. When time for the next blood sample arrives, rub the puncture a few times with a cloth moistened in alcohol, produce the venous stasis and the blood wells forth again. This can often be kept up almost indefinitely. We have thus carried on an entire carbohydrate tolerance test, extending over four hours, from a single puncture. This procedure does away with the recurring pain of venous puncture of the arm and its effect upon the blood sugar. It is of particular value in dealing with the neurotic individual. Urine sugar was determined by the method of Folin and Berglund[5] for normal sugar in the urine. The results expressed in milligrams per hour.

Feces. Feces were thoroughly mixed and about a 10 gm. sample taken for dry matter. Then a 50 gm. sample was taken and 150 c.c. of water added, thoroughly shaken, centrifuged, and the supernatant liquid poured off. This solution was precipitated by tungstic acid, filtered, neutralized, and the sugar determined by the Folin and Wu method.

DISCUSSION

Tables I to VII inclusive show the effect on blood and urinary sugar of 100 gm. of the different carbohydrates studied.

TABLE I.

CLINICAL LABORATORIES OF THE BATTLE CREEK SANITARIUM BATTLE CREEK, MICH.

GLUCOSE TOLERANCE TEST

Mr. E. H. C. (Glucose) No.

Dr. W. B. Lewis Date 7-2-29

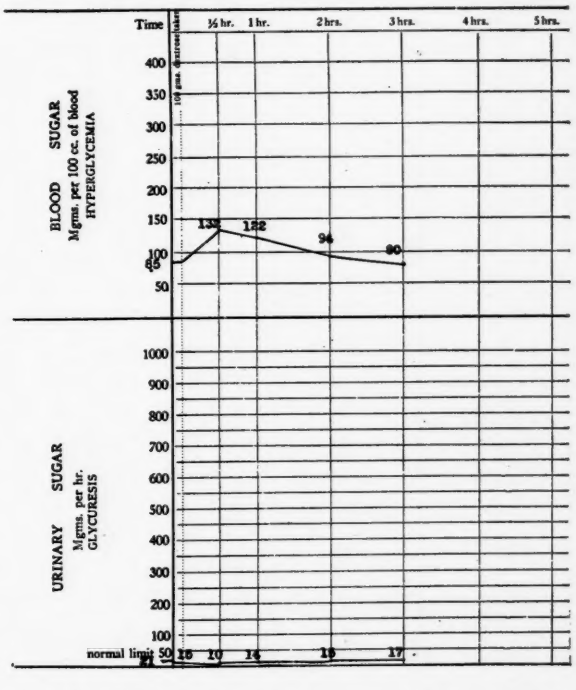


Table I shows typical normal glucose tolerance curves. Blood sugar reaches a maximum in one half hour, rapidly falls to the starting point and usually somewhat below it. Urinary sugar is practically a straight line; very little variation.

In contrast with Table I is Table II, that of a typical diabetic. This test shows the striking value of the tolerance test. The blood sugar before the test is only moderately increased, and the urine did not give a positive reaction for sugar. The patient

TABLE II.

CLINICAL LABORATORIES OF THE BATTLE CREEK SANITARIUM BATTLE CREEK, MICH.

GLUCOSE TOLERANCE TEST

Mr. C. H. No.

Dr. C. V. R. Date 2-11-25

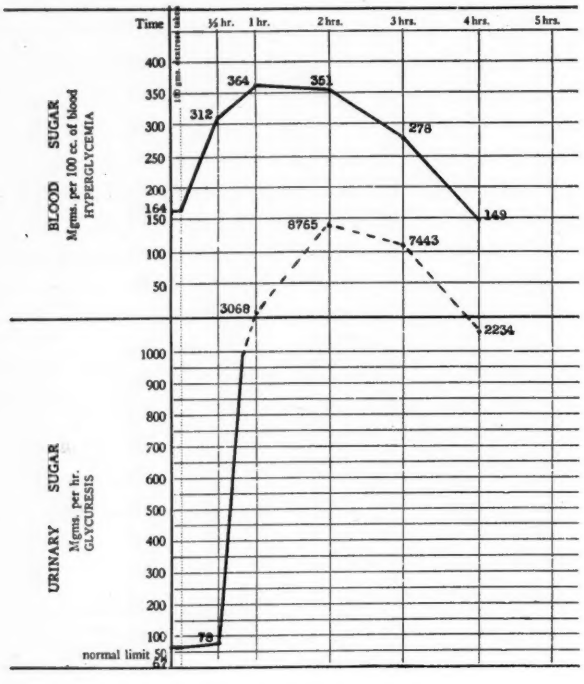


TABLE III.

CLINICAL LABORATORIES OF THE BATTLE CREEK SANITARIUM BATTLE CREEK, MICH.

GLUCOSE TOLERANCE TEST

Mr. E. H. C. (Lactose) No.

Dr. W. B. Lewis Date 7-7-29

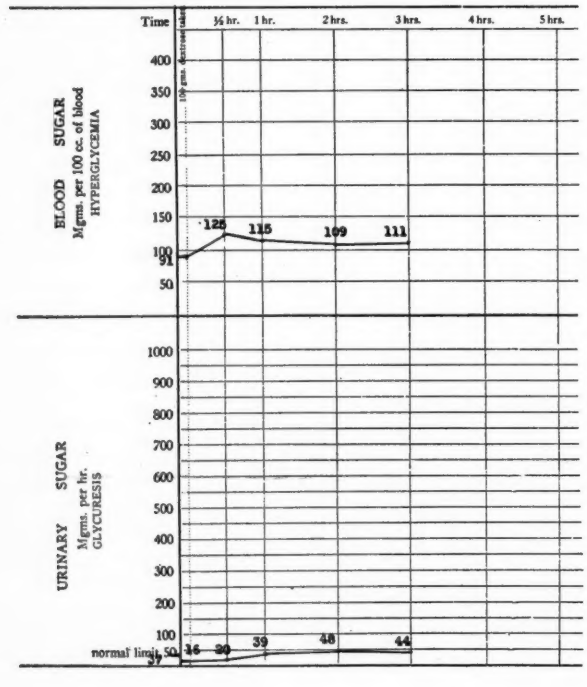


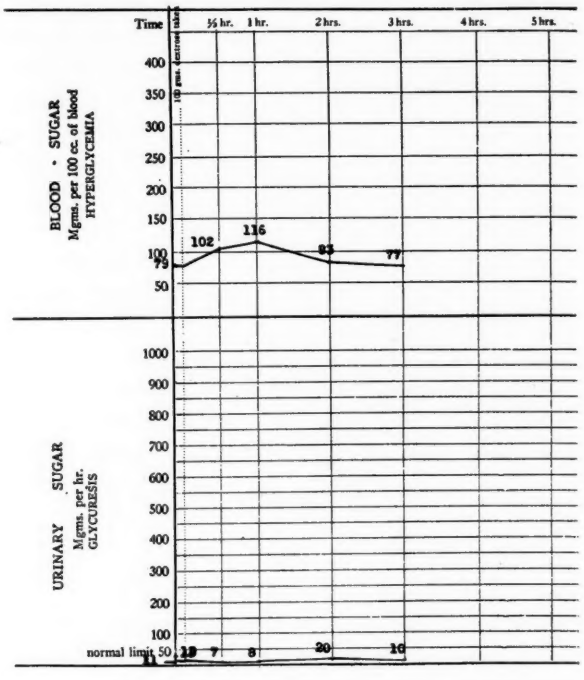
TABLE IV.

CLINICAL LABORATORIES OF THE BATTLE CREEK SANITARIUM BATTLE CREEK, MICH.

GLUCOSE TOLERANCE TEST

Mr. E. H. C. (Dextrin) No.

Dr. W. B. Lewis Date 7-11-29



did not apply for treatment as a diabetic. The diagnosis was made clear because of our routine practice of running a glucose tolerance test on all patients having an entrance blood sugar of 130 mgm. per 100 c. c. of blood or higher.

Table III, Lactose: Blood sugar is practically normal, showing a tendency to remain slightly increased. Urinary sugar is slightly increased and gave a faintly positive test throughout the experiment.

Table IV, Dextrin: Blood sugar curve a little bit slower in reaching a maximum. Urinary sugar, little if any effect shown. Possibly a slight increase in the hour following the high point in the blood.

Table V, Lacto-Dextrin: Shows, as one would expect, practically a composite of those for lactose and dextrine, and, due probably to the presence of the dextrin in the mixture, we do not get even a faintly positive test for sugar in the urine, certainly no increase of either blood or urinary sugar that could be interpreted as harmful.

Table VI, Beta Lactose (B-Lac): Typical normal blood sugar curve as for glucose. Urinary sugar curve shows a slight increase for one hour and a half. Folin,[6] in that masterly article on carbohydrates, page 251, says 10 gm. of lactose produces a temporary increase of sugar in the urine. We have

TABLE V.

CLINICAL LABORATORIES OF THE BATTLE CREEK SANITARIUM BATTLE CREEK, MICH.

GLUCOSE TOLERANCE TEST

Mr. E. H. C. (Lacto-Dextrin) No.

Dr. W. B. Lewis Date 7-16-29

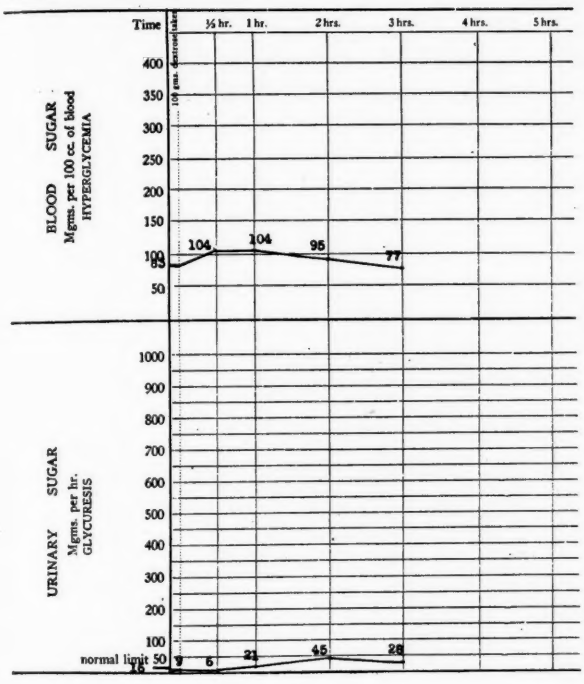


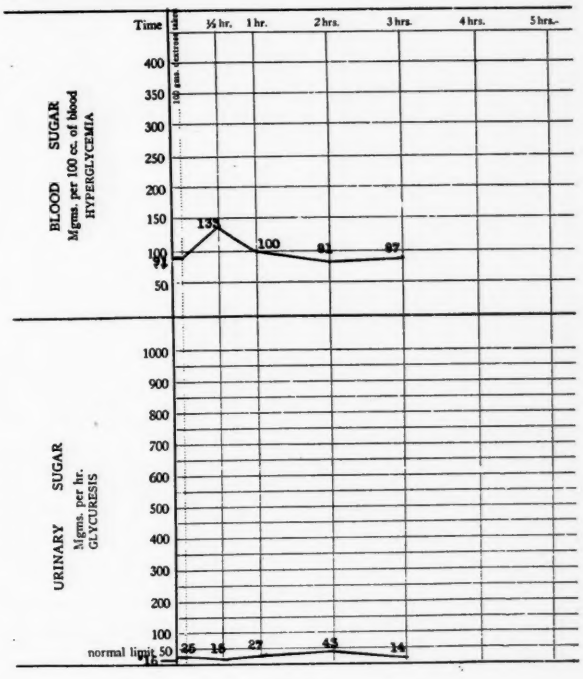
TABLE VI.

CLINICAL LABORATORIES OF THE BATTLE CREEK SANITARIUM BATTLE CREEK, MICH.

GLUCOSE TOLERANCE TEST

Mr. E. H. C. (B-Lac) No.

Dr. W. B. Lewis Date 7-19-29



found only such small and temporary increase after 100 gms. of lactose or B-Lac. Therefore, the conclusion would seem warranted that there is no danger from the larger amounts.

Table VII, Sucrose: Shows typical normal blood and urinary curves, almost identical with glucose.

Table VIII: In this table is shown the comparative effect on blood and urinary sugar of increasing large amounts of cane sugar and B-Lac. They both have about the same effect for both 100 gms. and 200 gms. With 200 gms. of cane sugar, at the high point of the blood sugar, there is a rather large increase in the urinary sugar after hydrolysis, indicating that possibly some cane sugar was eliminated as such, or only slightly changed. Such an amount is probably quite frequently consumed, in the form of candy, by many people.

Table IX. A comparison of the amount of reducing sugar in the feces after 300 grams of sucrose and 150 grams and 200 grams of B-Lac. There is practically no increase after the sucrose, but a marked increase after the B-Lac. Up to .932% or nearly 1% of the dry matter. This is important as showing the greater value of lactose preparations in producing a medium in the intestines favorable to the growth and development of the aciduric type of bacteria.

TABLE VII.

CLINICAL LABORATORIES OF THE BATTLE CREEK SANITARIUM BATTLE CREEK, MICH.

GLUCOSE TOLERANCE TEST

Mr. E. H. C. (Sucrose) No.

Dr. W. B. Lewis Date 7-23-29

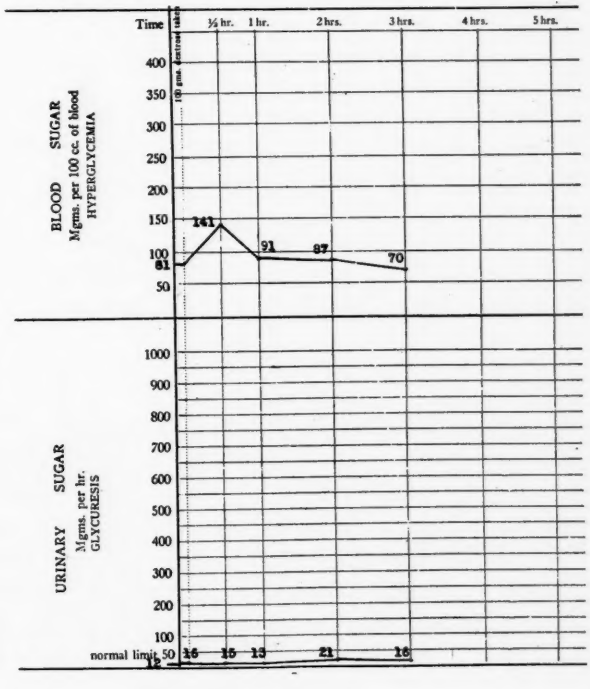


TABLE VIII

A STUDY OF REDUCING SUGAR IN THE URINE AFTER INGESTION OF DIFFERENT AMOUNTS

Time R.P.B.	Sugar 100 gm.	Blood Sugar Before-After Hydrolysis		URINE Volume c.c.	Qualitative Test	Grams % Sugar	Mgms. per Hr. Before-After Hydrolysis		Total Sugar
9:00	Sucrose	78	120	145	0	.020	22	72	29
9:30		115	169	78	0	.016	24	36	12
10:00		104	182	227	0	.016	72	54	36
11:00		74	115	600	0	.007	42	24	42
12:00		69	111	275	0	.005	14	22	14
W.B.L.	200 gm.								
9:05	Sucrose	78	133	94	0	.021	11	12	20
9:35		118	172	33	?	.026	18	24	9
10:00		135	192	92	++	.066	146	238	61
11:00		100	130	220	+	.045	99	119	99
12:00		96	133	152	0	.019	29	40	29
3:00				410	0	.014	14	18	57
P.R.C.									
8:50	100 gm.	95		40	0	.051	20		
9:20	B-Lac	111		20	0	.069	14		7
9:50		95		16	0	.098	16		8
10:50		95		40	0	.062	25		25
11:50		89		65	0	.042	27		27
7:00									
8:35	150 gm.			43	0	.033	9		14
9:35	B-Lac			110	0	.019	21		21
10:55				81	+	.078	47		63
12:00				43	green	.167	66		72
7:00									
8:15	200 gm.			35	0	.073	20		26
9:15	B-Lac			205	0	.050	102		102
10:15				53	+	.108	57		57
11:20				32	+	.308	91		98
12:20				19	+	.442	84		84
1:45				54	trace	.151	58		82
3:15				43	green	.092	26		39

Table X. Showing the increase of reducing sugar in the feces after taking a large amount of B-Lac, in four doses of about 2 oz. each.

Previous to the above carbohydrate tolerance studies we have run glucose tolerance tests on about 100 students. None of the normal healthy ones has shown alimentary glucosuria after the ingestion of 100 grams of glucose. This confirms Folin and Berglund's conclusion that in the normal healthy individual alimentary glucosuria cannot be produced. From another point of view, it means this: That when you find what

TABLE IX

A STUDY OF SUGAR RESIDUES IN FECES AFTER INGESTION OF DIFFERENT AMOUNTS

(Subject: P.R.C.)

Date 1929	Stool No.	Time	Sugar	Tot. Sugar mgm.	% Sugar Dry Matter
8–12	1	9:00 A. M.	300 gm. Sucrose	14.4	.041
8–12	2	11:30 A. M.		10.0	.027
8–13	3	8:00 A. M.		13.3	.036
8–14	4	8:30 A. M.	200 gm. B-Lac	9.7	.029
8–14	5	3:15 P. M.		236.0	.932
8–15	6	12:00 M.	150 gm. B-Lac	31.1	.169

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TABLE X

STUDY OF REDUCING SUGAR (B-LAC) IN FECES AFTER INGESTION OF DIFFERENT AMOUNTS

(Subject: P.R.)

Date 1929	Stool No.	Time	Sugar	Tot. CH mgm.	% Sugar Dry Matter
7-29	1	2:00 P. M.	Before taking any sugar	6	.057
7-29	2	11:00 P. M.	1½ oz. B-Lac Toast and milk		
7-30	3	8:00 A. M.	45 gm. B-Lac Milk 8:00 A. M.	20	.090
7-30	4	1:30 P. M.	60 gm. B-Lac Dinner		
7-30	5	7:00 P. M.	60 gm. Supper 60 gm. 11:00 P. M.	86	.229
7-31	6	8:00 A. M.			

seems to be alimentary glucosuria in a patient he should be studied carefully as an early or potential diabetic, or for some other disturbance of carbohydrate tolerance.

SUMMARY

1. A comparative study is made of a new commercial sugar, Beta Lactose (B-Lac) with five different sugars when taken in the same amount (100 gm.) and under similar conditions.

2. Beta Lactose leaves a residue of sugar in the feces while cane sugar does not and therefore therapeutically Beta Lactose should be efficient in combating intestinal toxemia.

3. The data obtained in this series show that the use of such amounts of lactose preparations does not exceed the normal individual's carbohydrate tolerance.

4. A modified technique of obtaining 0.1 c.c. blood samples is emphasized, which does away with the fear and pain of venous puncture of the arm.

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CHRONIC MAXILLARY SINUSITIS*

A STUDY OF THREE HUNDRED AND THIRTY-TWO OPERATED CASES**

A. P. WILKINSON, M.D.

DETROIT, MICHIGAN

The maxillary sinus is more often diseased than its fellow sinuses, not only on account of the extremely unfavorable situation of the ostium, but, also, because of the intimate relation of its floor to the roots of the teeth. The predisposing factors in chronic maxillary sinusitis are, locally, nasal obstructions of any type; as, deviations of the septum, spurs, ridges and hypertrophic turbinates; and, generally, lowered individual resistance; as, fatigue, exposure to cold, poor food, worry and any of the various diseases producing toxemia. In my study of 332 cases of chronic maxillary sinusitis there were 88 with a deflected septum, 76 with nasal polypi and 16 with atrophic turbinates.

The etiological factors in chronic maxillary sinusitis as given by Skillern[1] are:

(1) Idiopathic (rare).

(2) Direct extension from the nasal mucosa (coryza).

*Read before the 109th Annual Meeting of the Michigan State Medical Society, Jackson, September 17–19, 1929.

**Case records from the Henry Ford Hospital.

(3) Infectious diseases (circulatory system).
(4) From alveolus.
(5) Through contamination of overlying sinuses.
(6) Foreign bodies.
(7) Traumatism (direct or indirect).
(8) Osteomyelitis, tuberculosis, syphilis and malignant tumors.
(9) Chronic or latent empyema.

In this series of 332 cases of chronic maxillary sinusitis, practically all were secondary to acute catarrhal processes in the nose and nasopharynx. Here in Michigan we have an over-moist, changeable climate and nearly everyone suffers from frequent attacks of coryza, predisposing them to sinusitis. In all cases of coryza there is bound to be more or less inflammation of the maxillary sinus. After repeated acute infections the mucosa about the ostium becomes thickened, narrowing the normal opening, impairing drainage and interfering with the normal protection of the cilia. With each attack of coryza the efficiency of the cilia to cleanse the antrum is impaired and, therefore, the sinus mucosa will show an especial predilection for renewed inflammation; in that way, the disease may become chronic. Sinusitis may follow any of the acute infectious diseases; however, with influenza there is an especial predisposition towards chronic sinusitis.

Nine cases in this series were secondary to apical abscesses. This is only 3 per cent and far below the percentage given by numerous authors — Skillern[2] 20 per cent, Turner[3] 30 per cent, Luc[4] 50 per cent, Hajek[5] 8 per cent, Tucker[6] 7 per cent.

Where there is more than one sinus infected in a chronic condition it is difficult to tell which one was infected first; however, the drainage is downward and pus from the anterior ethmoids and frontal sinuses may pass through the ostium into the antrum. There were twelve cases in this series where the antrum would not clear up after operation until after operative procedures on the upper sinuses.

Foreign bodies, traumatism, osteomyelitis and syphilis are, in actuality, rare causes of chronic sinusitis.

Symptoms: In chronic maxillary sinusitis the prominent symptom is a persistent unilateral or bilateral nasal or postnasal discharge, more noticeable in the morning. Pain and discomfort are occasionally present, but are rare. When pain is complained of it is usually of the neuralgic type and in the supra-orbital region. In this study there were the following symptoms: catarrh. 279; head colds, 265; nasal obstruction, 142; headache, 46. It is interesting to note (Chart 1) that there were 102 cases, or 31 per cent, that came to the hospital without a complaint referable to the nose or throat.

Diagnosis: The diagnosis is based on the history, objective findings in the nose, transillumination, X-rays and, finally, antrum washings. There is usually pus in the nasopharynx and a general pharyngitis; a hypertrophic condition in the nose is usually present on the diseased side. However, if the disease is long standing there may be an atrophic condition present. One must not overlook the fact that many of the chronic cases have latent intervals when no pus is present in the nose and antrum washings are clear, although transillumination usually shows a shadow over the malar eminence and the roentgenogram will show thickened mucous membrane.

Treatment: Unless there is some urgent reason for immediate operation, correct any nasal deformity and treat the sinuses by means of a needle puncture and lavage at 2 or 3 day intervals for 2 or 3 weeks. If there is no improvement, conservative treatment is usually hopeless and operation should be advised.

Operation: What type of operation gives the best results? Some clinics report very good results from the antro-meatal operation and feel the radical operation necessary in a very small percentage of the cases. Other clinics favor the radical operation. Tucker[7] reported 673 chronic cases in which the antro-meatal operation was done. Only five of these cases required a Caldwell Luc operation later, as far as the author knows. D. Campbell Smyth[8] says, "The result seems too good to be true."

332 CASES CHRONIC MAXILLARY SINUSITIS

Average Age	38	Symptoms	
Male 196 Female	136	Catarrh	279
Complaints		Head Colds	265
No. ref. to N. & T.	102	Nasal Obstr.	142
Ref. to N. & T.		Headache	46
Colds	39	Diagnosis	
Nasal Obstr.	29	Transillumination	
Nasal Disch.	25	X-ray	178
Headache	22	Antrum Washing	
Sore Throat	19	Involvement	
Asthma	18	Right	103
Pain in Face	18	Left	117
Catarrh	16	Bilateral	112

Sinusitis	15	Nasal Deformity	
Cough	15	Deflected Septum	88
Disch. Ear	8	Polypi	76
Dizziness	7	Atrophic Turb.	16

In this series there were fifty-one cases where the antro-meatal operation was done and two hundred seventy-one cases where the Caldwell-Luc operation was performed. The antro-meatal operation was done on cases where it was felt the mucous membrane lining of the antrum would clear up with free drainage and irrigation. It is interesting to compare the length of time it took the antrum to clear (that is, no pus on irrigation) after the antro-meatal and after the radical operation. The antro-meatal cases averaged 28 days to clear, while those having the radical operation cleared in 22 days where polpyi were found, and in 16 days where the mucous membrane was markedly polypoid; the remaining cases cleared in 17 days.

In three of the antro-meatal cases a radical operation was necessary, in six cases a recurettement of the antrum was necessary after the radical operation; in twelve cases where the radical operation was performed it was necessary to do further operative procedure. In six cases an intra-nasal frontal and an ethmoid and sphenoid exenteration were done. In four cases ethmoid exenteration also was done, and in two cases that showed frontal involvement it was necessary to do an intra-nasal frontal and a radical frontal. The above twelve cases were followed for a time and the antrum washings still contained pus. I feel that a thorough search for other sinus involvement should be made in any operative case where pus is washed regularly from the antrum for more than three weeks.

The findings in the radical operation showed that 72 had polypi in the antrum and 49 marked polypoid mucous membrane, or 121 cases where the antro-meatal operation would have likely failed. Of the remaining 110 cases an antro-meatal operation would probably have been sufficient.

OPERATIONS

Antromeatal	51	
	45	28 Days—Washing Clear
	3	Rad. Opr. Nec.
	3	Data Incomplete
Radical Anthrum	271	
Ant. Polyps	72	22 Days—Washing Clear
Polypoid M.M.	49	16 Days—Washing Clear
Remaining	110	17 Days—Washing Clear
Improved	7	
Data Incomplete	33	

Secondary Opr.		Anesthetic	
Rad. Opr. Repeat.	6	Local	317
Eth. Sph. Fr.	6	Ether	15
Ethmoid	4	Complications	
Frontal	1	Death	1
Frontal Rad.	1	Osteomyelitis	2

Anesthesia:* The operations were largely done under local anesthesia, which permits much better observation and more judicial curettement than general anesthesia. (317 under local anesthesia; 15 under ether anesthesia.)

Results: Of the 51 antro-meatal cases 45 were cured; that is, the washings were clear from the antrum; in 3 cases a radical operation was necessary; in 3 cases data were incomplete. Of the 271 cases where the radical operation was done there were 230 cures; 7 cases were improved, and in 33 data were incomplete.

Complications: There was one death caused by a pulmonary complication following ether anesthesia. Two cases developed osteomyelitis but cleared up after through-and-through drainage.

CONCLUSIONS

From the results it would seem that a very thorough study of each case is necessary before deciding the type of operation. By studying the history of the case, findings in the nose and nasopharynx, transillumination, X-rays, before and after lipiodol injection, and several antrum washings, we should form a mental picture of the mucous membrane lining of the antrum and then decide on the type of operation.

664 Fisher Bldg.

*Method of local anesthesia:
10 per cent cocaine with equal parts of adrenalin (1-1000) is applied directly to Meckel's ganglion and also around the anterior nasal nerve. This is done by atomizer and subsequent packing with the same anesthesia with cotton selvedge edge gauze. The maxillary sinus is washed with saline solution and the excess saline is removed with a Politzer bag, then one dram of 3 per cent cocaine and adrenalin (1-300) is placed in the maxillary sinus and this is gently expressed by means of Politzer bag. The nose in the inferior turbinate region is then packed with a 5 per cent cocaine solution, with an equal amount of adrenalin (1-1000). The patient is allowed to wait 5 to 10 minutes and then ¼ per cent novocaine is injected under the buccal membrane and distributed along the infra-orbital nerve.

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CHILDHOOD TUBERCULOSIS*

HENRY D. CHADWICK, M.D.
DETROIT, MICHIGAN

The diagnosis of the childhood type of pulmonary tuberculosis must be made from X-ray evidence. It can also be said with equal truth that cases of pulmonary tuberculosis of the adult type in children and adults can be diagnosed at a much earlier stage by X-ray than by physical examination.

The National Tuberculosis Association is planning a nation-wide publicity campaign to be carried on during the month of April, calling attention to tuberculosis as a disease not infrequently found in children.

There are two types of pulmonary tuberculosis—the childhood type and the adult type. The childhood type of tuberculosis is the name adopted by the American Sanatorium Association to describe the diffuse or nodular lesions and associated tracheobronchial lymph nodes that result from a first infection of the pulmonary tissue with tubercle bacilli.

The adult type of tuberculosis is the result of a reinfection from an exogenous or endogenous source. It generally begins in the apex, from which it has a tendency to spread. It is characteristic of this form that the tracheobronchial lymph nodes remain uninvolved.

The diagnosis of the childhood type depends upon the consideration of these factors: History, symptoms, physical signs, tuberculin test, X-ray evidence and exclusion of other causes that might produce similar conditions.

History.—Inquiry should be made as to whether the patient has been intimately associated with any person who has had pulmonary tuberculosis. The closer the contact, the more opportunity there is for infection. Prolonged exposure of a child to a patient with pulmonary tuberculosis usually results in infection, and excessive infection produces disease. Relationship to a person who has tuberculosis, without opportunity for contact, is not important in considering diagnosis.

SYMPTOMS

Many children have the childhood type of tuberculosis without manifesting any symptoms that can be ascribed to the disease, although they may have a progressive lesion.

Weight.—Either the childhood or adult type of tuberculosis may be found in overweight, average weight or underweight children. Therefore, many cases of tuberculosis will be missed if only underweight children are examined. Those in apparently excellent general condition may have an active focus of disease.

Undue Fatigue.—The tendency to tire easily is often noted and may be said to be the most common symptom in these children.

Cough.—Cough may occur during the stage of pulmonary infiltration. It is not, however, a constant symptom even in this phase of the disease; and, if present, is often attributed to a cold. It is not present after the perifocal inflammation has absorbed and the caseous or calcifying stage of the pulmonary nodule is reached, or when the disease is manifest only in the tracheobronchial nodes.

Fever.—It should be kept in mind that a child's temperature is more unstable and is about one degree higher than an adult's. Therefore, a child's mouth temperature may be within normal limits if it occasionally goes to one hundred degrees. If temperatures are taken of all the pupils in a classroom, several of them will be found to have temperatures of ninety-nine and five-tenths degrees to one hundred and no evidence of disease can be discovered. This is especially true if the room temperature ranges from seventy-five degrees to eighty degrees, as is often the case in school buildings. Active exercise in hot weather will often cause a rise in temperature of one or two degrees in a healthy child. A persistent temperature of one hundred degrees should lead to a careful search for the cause. It may be found that the child has tuberculosis, but most children with the childhood type of disease do not have abnormal temperatures.

*A booklet on childhood type of tuberculosis has been compiled by Dr. Henry D. Chadwick and Dr. F. Maurice McPhedran and published by the National Tuberculosis Association. This contains diagrams and reproductions of X-ray films showing different phases of childhood tuberculosis and a detailed description of the intracutaneous (Mantoux) and cutaneous (Pirquet) tuberculin test. This is to be distributed by the state and local tuberculosis associations from whom copies can be obtained.

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Physical Signs.—A diagnosis of some phases of the childhood type of tuberculosis cannot be made by physical examination. Auscultation and percussion are of service only in finding diffuse infiltrations of the lung or such enormously enlarged nodes as are found chiefly in infants. Slight infiltrated areas, tuberculous nodules in the parenchyma and most lesions of the trancheobronchial glands cannot be demonstrated by physical examination. As a rule, only diffuse infiltrations or consolidations of the parenchyma give rise to physical signs.

Tuberculin Test.—A positive reaction to the tuberculin test always means infection with tubercle bacilli, but it does not necessarily indicate disease, or whether it is active or latent. The Mantoux, or intracutaneous test, is more accurate and with it a slightly larger number of reactors will be obtained than is possible with the Pirquet technic.

A positive tuberculin test always means the presence of tuberculous infection. Failure to get a positive reaction, however, does not always exclude tuberculosis. Sensitiveness to tuberculin may be absent in acute miliary or generalized tuberculosis and during some acute infectious diseases.

X-ray.—A roentgenogram is indispensable in the examination of a child's chest. Without it a positive diagnosis of the childhood type of tuberculosis cannot be made. Furthermore, a physician, however good a clinician he may be, is not justified in excluding tuberculosis without checking his physical examination of the chest with the evidence that only an X-ray film can give. There are two groups of lesions peculiar to the childhood type of tuberculosis that should be looked for in an X-ray film—the parenchymal and the tracheobronchial.

The parenchymal lesions may be found in any part of the lung. They may be nodular or diffuse. If diffuse the appearance is that of tuberculous pneumonia. As resorption takes place only one or more small nodules, or a few strands, remain. This evidence in time may also disappear.

The tracheobronchial node involvement may be seen as masses along the trachea, the main bronchi or their larger subdivisions. The density of the shadow cast by these diseased nodes depends chiefly upon the degree of calcification that has occurred. During the caseous stage, before any deposit of calcium has taken place, their density is so near that of the structures, vessels and bronchi with their delicate areolar sheath that together fill the hilum space that the nodes cannot be differentiated. In relatively rare instances the nodes are so large that they protrude beyond the normal hilum area. Then the outline of the diseased nodes can be seen as they have a greater density than the lung tissue with which it is in contact.

Differential Diagnosis.—The diseases that sometimes simulate the childhood type of tuberculosis are bronchopneumonia, bronchiectasis, pulmonary abscess, Hodgkin's disease, enlarged thymus, neoplasms and mediastinal abscess.

TREATMENT

The essentials are rest, fresh air, suitable food and sunlight. When these factors cannot be obtained at home, institutional care is advisable. These children, except those with pulmonary infiltrations, need not be excluded from school as they have no open lesions, and therefore cannot infect other children with whom they may associate. Open air rooms, summer camps, preventoria serve an excellent purpose in giving these children living conditions that will aid them in healing their tuberculous lesions. The removal of physical defects that retard growth should be attended to without delay. It should be noted, however, that children with diffuse tuberculous pulmonary infiltrations should not be subjected to a general anesthetic or to tonsillectomy, as surgery in such cases often activates the disease.

Search for the Source of Disease.—It is important that all the other members of the family should be examined when a case of tuberculosis is discovered, so that any unrecognized spreader of tubercle bacilli can be found and kept from doing further mischief.

When an adult is found to have pulmonary tuberculosis, the children who have been in contact with the case should have a tuberculin test and the reactors X-rayed. When a child is found to have tuberculosis of any type, the adults should have a physical examination and an X-ray of the chest. It is not enough to depend upon physical examination to exclude tuberculosis. The history in many cases is unreliable, as previous illness is frequently forgotten or denied. A roentgenogram is needed to reveal fibroid cases that are often of long duration and sometimes have few or no

physical signs, and because unrecognized are a great menace to the community.

PROGNOSIS

This depends largely upon the child's reaction to the tuberculous infection and also to the frequency and dosage of bacilli. If further infection is stopped, most children will become adjusted to their disease unless extensive infiltration of the lung is present. Children sometimes succumb to an excessive infection, and death in these cases is due to miliary tuberculosis or a tuberculous pneumonia which becomes generalized. The majority, however, are able to withstand the infection, and the diseased nodules in the lungs and nodes become calcified and well walled off by fibrous tissue. Notwithstanding how well healed these lesions appear to be, they are a source of danger during the period of adolescence. Many girls and some boys break down at that time with pulmonary tuberculosis. From one-third to one-half of the cases of tuberculosis of the adult type found in adolescents have had a preceding childhood type of disease that is evident from the calcified lesions seen in the roentgenogram. Therefore, boys and girls below the age of twenty who are known to have the childhood type of tuberculosis should be advised to avoid strenuous exercise and competitive games unless their tuberculin reaction is negative and contact is known to have ceased in early childhood. Without this precaution there is great danger in these cases that excessive strain may reactivate dormant infection.

MICHIGAN'S DEPARTMENT OF HEALTH

GUY L. KIEFER, M.D., Commissioner
LANSING, MICHIGAN

STREAM POLLUTION PROBLEMS IN MICHIGAN

An interesting outline of the present status of stream pollution control measures in Michigan was presented to the Ninth Annual Public Health Conference in Lansing in January by Walter A. Sperry, Chem. E., Chief Engineer and Executive Secretary, Stream Control Commission of Michigan. We quote some of the paragraphs of special interest from Mr. Sperry's paper:

"At the threshold of 1930, Michigan stands 26th in age and 22nd in area among the states. It has become 18th in crops; 14th in farm values; 8th in live stock; 6th in population; 5th in wage earners; 4th in copper; 3rd in exports; 2d in iron; 1st in salt, chemical products, drugs, automobiles, engines, threshing machines and refrigerators, with the Soo the world's largest water gateway; and its furniture, food, celery, book paper and silk known all over the world.

"This wide range of mineral wealth coupled with its relation to navigable waterways, timber and fruit has in twenty-five years changed Michigan sharply from agricultural to industrial pursuits . . . while its inland lakes, long lake shore lines, summer climate, parks, highways, woods, trout streams and hunting grounds, all in easy reach of the industrial centers, have made for Michigan a 'peculiar heritage' to keep us well balanced, normal, healthy and intensively productive.

"Michigan's population has increased 111.4 per cent since 1890, being approximately 4,500,000 in 1930. Of this population, 85 per cent resides in 47 per cent of the State's total area and below a line just north of Bay City. In this area the total population has increased 128 per cent in the last four decades. Also in this area, 80 per cent of the world's automotive products are made. Here is the 4th largest city in the United States and here industrial workers exceed by more than 60,000 the whole state population in 1900. Seven per cent of the population resides in the Upper Peninsula; six and one-half per cent in the Lower Peninsula above Bay City in which areas there are 22 people per square mile in comparison with 149 people per square mile in the lower half of the State.

"To meet the health and conservation problems created in this rapidly developing industrial area, it is necessary for Michigan to give prompt and efficient attention to stream pollution problems.

"In the Upper Peninsula, 40 communities have sewage collection systems and 10 have installed sewage disposal arrangements. Approximately 22 major industries discharge direct to the nearby streams. Of the total population, therefore, 38 per cent discharge their collected sewage direct to

the water courses and lakes. In the upper half of the Lower Peninsula, 36 communities have sewage collecting systems and 5 communities are equipped with sewage disposal works, while 40 major industries discharge directly to the streams. Here 27 per cent of the total population discharge direct to the water ways. In both these cases, few water supplies are directly affected for the present however, the problem being rather that of preserving the natural conditions of the streams, by conserving the fishing and recreational values. An interesting specific example of this is found at Traverse City located at the mouth of the Boardman River, where the bathing beach has been closed 'by order' due to the direct discharge of the city sewage therein.

"It is in the intensive industrial areas of the lower half of the Lower Peninsula that stream pollution problems are most acute. Here 36 communities have disposal plants representing 10 per cent of the population, and 2,847,000 persons representing 161 communities are connected directly to the lakes and waterways without means of disposal and with the capacity to discharge annually approximately 128,000 tons of sewage solids to the waterways. This is equivalent to a heavy freight train of 50 to 60 cars daily and must give every thinking person cause to consider Michigan's duty to Michigan. Due to the growth of cities in the last two decades and the present day tendency to enjoy the comforts of plumbing and sewage collecting systems, the amount of polluting matter reaching our waterways today is 3 or 4 times increased over 30 years ago. * * *

"Progress, however, has been and is being made. It is necessarily slow due to the sums of money required, which in turn require an intelligently aroused electorate who will authorize the necessary expenditure. * * *

"Michigan became definitely active through its departments of Health and Conservation in the latter part of 1925, preparing for conferences early in 1926 with the cities and industrial groups of the state, discussing the problem and initiating the work of submitting the reports and plans for sewage disposal works to the Bureau of Engineering of the State Department of Health for review, under Act 98 of the laws of 1913. On April 1, 1929, this bureau listed plants in operation in this state to the number of 38. * * *

"The experience of the Departments of Health and Conservation since these statewide hearings in 1926 ripened into legislation in 1929 which makes provision for adequate administrative tools to deal with the state's communities both by way of giving the state sufficient breadth of authority to act effectively where necessary as well as providing for Michigan's communities means of financing sewage disposal works, other than the usual bonding methods. * * * This group of 1929 laws places Michigan abreast of the leader states in sanitary legislation, making it possible for Michigan to put into practice what experience of the past indicates as the most reasonable and effective forms of legislation with which to attack the problems as outlined. * * *

"Taken as a whole, there are 322 major industries distributed throughout the State. These include gravel, tanning, canning, sugar, paper, gas, milk and miscellaneous industries. Each of these industries offers a special pollution problem. This is particularly true of the milk industries whose effluent usually requires much more intensive treatment than is necessary for discharges from the canning factory, which again is differentiated from the paper mill, whose refuse is more bulky. Experience is teaching us that the State can best deal with these situations through the various group associations, individual offenders being reached through association officials more effectively than by direct methods.

"This is the picture of Michigan as we find it today. In conclusion, let us point out that but 10 per cent of the entire population of this state are equipped to discharge through sewage disposal arrangements; that 68 per cent of the entire population discharge direct to our lakes and waterways with the combined capacity to deposit therein 137,835 tons of sewage solids annually; and that whereas 38 of our Michigan communities have built disposal plants, 96 of the larger communities must build them. More attention must be paid to the industrial problem; systematic surveys of the state streams, watershed by watershed, must be undertaken to determine their flow, the amount of pollution, from whence it comes, whom it affects, and how. Public sentiment must be aroused and all state and civic bodies enlisted. Nor must we forget the value of working with our school children.

"This is surely a sufficient array of facts

to justify Michigan in this, its serious campaign to save and conserve our God-given resources."

NEW STUDY UNDERTAKEN

A new study was begun by the Bureau of Child Hygiene and Public Health Nursing in conjunction with the Michigan State Medical Society on Monday, March 3, to supplement the maternal mortality study just completed. Since 1,627 deaths of women from causes connected with childbirth were included in the latter study, the same number of cases will be taken up in the new survey. But they will be births which were survived by the mothers.

Facts will be assembled concerning the prenatal care of the mothers, their medical and puerperal history, the care received at delivery and during the lying-in period, and the results for both mothers and babies. These facts will be tabulated and compared with similar facts obtained in the maternal mortality study, and they should furnish valuable information concerning the factors which affect our maternal and infant mortality rates.

The letter from Doctor J. D. Brook introducing the new study to the physicians of Michigan follows:

To the Medical Profession of Michigan:

During the past two years the Michigan Department of Health in coöperation with the Michigan State Medical Society has been making a study of maternal mortality.

This job is now finished but it is proposed to conduct a similar study of an equal number of cases, for the purpose of comparison, under similar conditions, of mothers who have survived childbirth.

Dr. Florence Knowlton, who presents this letter, has been assigned to this work. Assuring you that there will be no publicity as to either parent or physician, we are asking that you give her any assistance you can to aid her in the compiling of these statistics for comparative study.

Very sincerely yours,
(Signed) J. D. BROOK, M.D.,
President, Michigan State Med. Society.

L. R. S.

DEPARTMENTAL COOPERATION FOR HEALTH IN INDUSTRIES

The best health records are found in those establishments where there is a close coöperative working relation between their safety, sanitary and medical departments, and also the community welfare agencies and local boards of health.

The attempt to correlate the efforts of several service departments of an industry that have to do with the safety and comfort of employees is a long step toward the much desired goal—the health and contentment of the workers. Such coöperation results in less liability to accidents or illness, and less time lost from either cause; greater conservation and protection of the energies of the workers giving them a longer period of continuous efficient service. The ultimate result is greater quantity and better quality of product of their labor, which benefits alike the workers and employers.

Industries are awakening to the fact that medical service cannot be confined to the care of injuries of employees, but that each worker must, as far as possible, be kept in mental and physical condition to continue uninterruptedly to perform the type of work for which he has shown ability.

Medical directors in industries have learned that they cannot ignore the harmful influences of certain environments of workers outside as well as inside the plants. Through a plant health department much may be discovered that should be reported to community welfare agencies and the boards of health for correction and control.

Through the medical department, workers are being educated as to the purpose of sanitary and safety measures for their health benefit, also, as to effects of their environment and personal health habits, outside as well as in the plant, and shown their personal responsibility for correction of defects or habits that may be causing inefficiency, loss of time and irregular working periods. The good response justifies these efforts.

F. A. P.

THE SUMMER ROUND-UP

Many communities, and physicians, know from experience the aims and plan of conduct of the Summer Round-Up of the Children. It is an activity of the Congress of Parents and Teachers, begun in 1925 and now one of the most important projects of that organization. Its general purpose is to have an examination made, during the summer, of all children who are to enter school for the first time in the fall, and to have remediable defects corrected.

The Michigan Department of Health works closely with the Michigan Congress of Parents and Teachers in coördinating the activities of the local associations. Every effort is made to see that they are carried on in accordance with recognized public health procedure.

The summer program has already been launched in Michigan, by a letter from the State President of the Michigan Congress of Parents and Teachers to the Presidents

of all County Medical Societies. We quote the letter:

February 14, 1930.

My dear Doctor:

We wish to arouse your interest, and that of the members of your medical society in the Summer Round-Up of the Children, a project of the Congress of Parents and Teachers which has for its object the entrance into school each year of children free from remediable defects. To accomplish this object, some arrangements must be made for the examination of children who are to enter school in the fall, and the correction of existing defects.

A letter from Dr. F. C. Warnshuis, Secretary of the Michigan Medical Society, to Dr. Guy L. Kiefer, State Health Commissioner, states that the Executive Committee of the Medical Society endorses the coöperation of the State Health Department in the Summer Round-Up. This project, therefore, has the approval of your own State Medical Society, and we hope that the members of your County Medical Society may go on record as being willing to coöperate in this project to make the children of their community physically fit to enter school.

Some one from your community may call on you in the near future with reference to the Summer Round-Up and we hope that you may offer your coöperation and that of your group in this very worthy movement.

Sincerely yours,
(Signed) (Mrs. J. K.) FRANCES S. PETTENGILL, President,
Michigan Congress of
Parents and Teachers.

THE NEW PLUMBING CODE

The state plumbing law passed by the last legislature, Act 266, P. A. 1929, lays down three requirements to be met by the State Commissioner of Health. The necessary organization must be set up so that all plumbers shall be licensed; inspection and supervision of plumbing must be provided; and minimum standards for plumbing practice must be adopted and enforced.

The necessity for minimum standards for plumbing practice is not generally appreciated. Plumbing has played no small part in the advance of civilization. It came into being through the struggle of mankind to store, treat and distribute safe running water for household and industrial purposes. It has provided many comforts, fostered cleanliness, and eliminated much drudgery. It furnishes the opportunity for liberal use of water, and for the rapid removal of human wastes. When it is installed in accordance with scientific principles and natural laws its value to public health is obvious.

Failure to observe these principles and laws in the installation of plumbing, however, brings about conditions which can be remedied only through the adoption of certain minimum requirements. Hence the necessity for a state plumbing code.

It was in 1921 that the Federal Government recognized the importance of standardizing plumbing, and through Secretary of Commerce Hoover a committee was appointed to draw up a standard plumbing code. This is frequently spoken of as the Hoover Code, and it has been accepted as the basis for state plumbing codes throughout the United States.

The new Michigan plumbing code sets forth, first, basic plumbing principles and defines the terms used in plumbing. It states the general regulations for the installation of plumbing and specifies the minimum quality, weights and materials. It states how joints and connections between various kinds of material shall be made, and where traps and cleanouts are required and where prohibited. It deals with water supply and distribution, cross connections, and the minimum sizes of supply pipes which shall be used for fixtures to insure sufficient and proper amount of water being supplied to them. It specifies the number of plumbing fixtures which shall be installed in various types of buildings and the type of fixtures which may be used; the kind and size of soil, waste, and vent pipes that may be installed and how they should be installed; of what material and how the building drain and sewers and storm water drains shall be constructed; and how special wastes shall be taken care of. There are also specifications for the inspection and tests of plumbing, and specifications for the construction of catch basins and sewage treatment works.

A portion of the code is devoted to its administration, the duties of owners, the competency of plumbers, including the rules governing the examination of plumbers, and the penalties for violations.

The entire code is designed to assure better plumbing for the public, and thereby to provide better health conditions. It is not a plumbers' code for the benefit of the plumbing trade, but a code for the public, to which the plumber must adhere. It insures the installation of plumbing in accordance with scientific principles and natural laws, with consequent better living conditions.

Two public hearings on the plumbing code have been held in Lansing, with the building trades fully—and vociferously—represented. The Committee is now working on the revision. J. M. H.

MAY DAY—CHILD HEALTH DAY

Plans for the celebration of May Day as Child Health Day are already taking shape in Michigan, as in most other states. The idea, which originated with the American Child Health Association several years ago, has a strong popular appeal.

A State May Day Committee made up of representatives of all the agencies in Michigan interested in the welfare of children has general supervision of activities in Michigan. Suggested community programs are sent out, posters, plays, and pageants are furnished, and all affiliated organizations are urged to take some active part in the celebration. Emphasis shifts from year to year from one aspect of health to another, but it always centers around children. This year special stress is to be laid upon the utilization of all existing local health resources for the promotion of the health of children.

FINAL COMMUNICABLE DISEASE REPORT FOR 1929

Final reports on the incidence of communicable diseases throughout Michigan in 1929 have been received in the Bureau of Records and Statistics. Since they differ somewhat from the tentative report already published in these columns, the revised tabulation is given:

	Cases Reported		
	1929	1928	5 Year Average
Pneumonia	7,458	7,562	5,937
Tuberculosis	6,248	5,885	5,654
Typhoid Fever	310	390	668
Diphtheria	4,618	3,724	4,743
Whooping Cough	9,340	9,700	7,632
Scarlet Fever	14,245	10,486	11,855
Measles	18,041	27,039	20,922
Smallpox	2,410	1,335	1,726
Meningitis	1,864	276	156
Poliomyelitis	180	77	242
Syphilis	16,606	15,323	14,739
Gonorrhea	9,661	8,592	9,953
Chancroid	333	100	119
Total	91,314	90,489	84,346

TRUTH ABOUT MEDICINE

NEW AND NON-OFFICIAL REMEDIES

Mead's Viosterol in Oil 100 D.—A brand of viosteral in oil 100 D, N.N.R. (Jour. A.M.A., August 31, 1929, p. 693). Mead Johnson & Co., Evansville, Indiana.

NEW TREATMENTS FOR CANCER

In a letter Walter B. Coffey and John D. Humber outline their work in connection with an experimental method of treating cancer which involves the injection of extracts of the suprarenal cortex. The work is in the earliest of experimental stages and hardly sufficient on which to base definite claims. The claims of Drs. Coffey and Humber have, like those of most investigators, been exaggerated in current reports. The publicity, given through Hearst newspapers primarily, to the Coffey-Humber cancer treatment has brought about the very type of injury to scientific research that was predicted. Regardless of the fact that Drs. Coffey and Humber have made it clear that their work is purely experimental and that they do not claim to have developed a cancer cure, the great trek of cancer sufferers across the continent has begun and physicians everywhere are besought by their patients to procure this remedy. (Jour. A. M. A., February 22, 1930, p. 562.)

COUNCIL OF PHARMACY 25 YEARS OLD

The Twenty-Fifth Anniversary of the Council on Pharmacy and Chemistry.—At a meeting held February 3, 1905, the Board of Trustees of the American Medical Association created an advisory board to be known as the Council on Pharmacy and Chemistry. The organization of this Council was perfected on February 11, 1905. Thus the Council on Pharmacy and Chemistry passes the twenty-fifth year of its organization and continues, in a second quarter century, one of the most notable works for scientific medicine ever accomplished by any organized group. It is significant that several of the original members of the body have maintained their connection since its inception and that the secretary, W. A. Puckner, has rendered continuous service as a full-time officer for the body from the first. The Council could not have achieved what it has, without the support of the medical profession of our country. Thus, with the establishment of the Council, the advertising of medicinal preparations in the Journal of the American Medical Association was limited to those products that had been passed by the Council. The same rule has applied to the other publications of the Association, and finally every state medical journal, except those of Illinois and New York, followed this lead. A considerable number of journals not controlled by medical societies also give their support to the Council's work. The medical profession must support the Council or its work will be futile. The members of the Council serve without remuneration and the Journal of the American Medical Association tenders to them the thanks and appreciation of the profession that they have so well served. (Jour. A. M. A., February 8, 1930, p. 413.)

THE COMMITTEE ON FOODS

More than a hundred products, representing the products of numerous manufacturers, have been submitted to the committee, in addition to several national advertising campaigns by coöperative marketing organizations. This coöperation is welcomed by the committee but obviously has thrown a great burden of work on the committee at the start. Manufacturers have greeted with acclaim the permission to use on packages and in advertising the seal of the committee. Whereas less food is eaten, so far as concerns caloric or energy value, foods have been greatly modified to improve palatability and to provide what are recognized as necessary ingredients in the form of vitamins and mineral salts. It is the hope of the committee that its efforts will give stability to a rapidly growing industry and prevent the sinking of the modern food market in a morass of hokum such as engulfed the drug industry in its developing stages. (Jour. A. M. A., February 8, 1930, p. 415.)

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All communications regarding advertising and subscriptions should be addressed to F. C. Warnshuis, M.D., Suite 1508 Grand Rapids National Bank Bldg., Grand Rapids, Michigan.

APRIL, 1930

"I hold every man a debtor to his profession, from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves, by way of amends, to be a help and ornament thereunto."

—Francis Bacon.

EDITORIAL

WHERE WE STAND IN THE EYES OF THE LAW

The question of physicians' rights, duties and responsibilities appears to be one that has never been definitely settled. The determination of these things is the field of medical jurisprudence which has come to be a very important borderline field between medicine and law.

Is a physician operating in a charitable hospital exempt from liability on account of the charitable nature of the institution? Answer, he is not exempt. This editorial is based upon a communication on the subject from Mr. Herbert Barbour to the Chairman of the Medico-Legal Committee of the Michigan State Medical Society. Mr. Barbour cites a case against a doctor who performed an operation at a prominent Michigan hospital. "The reasons given for exemption of a charitable institution from damages for its torts does not in any way apply to the physician who is operating in the institution."

Is a doctor liable if he were employed by a charitable hospital on a stated salary? A case is cited in which the Supreme Court of Michigan held the physician liable even though operating in a charitable institution.

In this same communication Mr. Barbour states that there have been a number of rulings in which corporations employing physicians or surgeons to attend injured employees are not liable for damages provided the companies use their best judgment in the employment of doctors. According to this it appears that the industrial surgeon who works on salary is not exempt from personal responsibility in cases of alleged malpractice.

The question has arisen as to the ownership of X-ray films. Mr. Barbour goes on to state that he has not been able to find a decision directly on this point but quotes a Massachusetts case which uses the following language:

"There was undisputed evidence that the X-rays taken in the hospital laboratory as these rays were, are considered hospital property; hence they are not taken except on the order of the physician or surgeon, that the X-ray pictures themselves are indexed and numbered as part of the hospital record, that from the pictures the radiologist makes findings in writing, which are a part of the X-ray laboratory records and held there as part of the record of the hospital."

Mr. Barbour gives his own opinion to the effect that the patient does not pay for the plates but for the physician's opinion as to the condition from which he is suffering. On the other hand he feels that the patient is entitled to the physician's diagnosis of his condition if the physician was employed for that specific purpose. To sum up, then, it is evident that the physician should surround himself with every legitimate protection whether he is employed on salary in a hospital or by an industrial plant or insurance company, or whether he is engaged in the private independent practice of his profession. There is no better protection than membership in his County and State Medical Society as well as in one of the insurance societies that will insure financial protection in the case of an adverse decision by the courts.

In regard to the ownership of X-ray plates, Mr. Barbour's opinion, as well as that of the court decision mentioned, ap-

pears very logical and reasonable. An X-ray plate is the basis for an interpretation and the interpretation calls for more or less practice and skill. It seems reasonable, therefore, that the X-ray film being a part of the radiologist's records, namely the basis for his interpretation, is his personal property, subject, however, to demand by the courts who may find occasion to subpœna the doctor to interprete the same.

MEDICAL FACILITIES IN THE UNITED STATES

The Committee on the Cost of Medical Care is beginning to report progress on its investigations. A brochure under the above title has been published recently. The term "medical facilities" is defined to include the private practice of physicians, dentists, nurses and other individuals and the work of all types of medical and public health agencies. The Committee states that there are approximately 1,500,000 persons in the United States employed in the care and prevention of illness. The personnel is not without interest. There are 143,000 physicians; 67,334 dentists; 200,000 trained nurses; practical nurses 151,996; druggists 100,000; hospital personnel including superintendents 552,600; Health Department personnel 11.500; the number includes also technicians and assistants of various kinds. Among the irregulars and cultists are enumerated osteopaths 7,602; chiropractors 1,500; naturopaths 500; christian science practitioners 8,500.

The report notes that, the country over, physicians have not been increasing as rapidly as population, while both dentists and registered nurses have increased at much greater rate. The growth of clinics has been spectacular. The report defines "clinic" as an institution receiving ambulatory patients for diagnosis, therapeutic or preventive medical service. The report states that though the increase in the number of doctors does not keep pace with the increasing population, we have a greater number of physicians per 100,000 population than any other country in the world. The inadequate distribution is to be regretted. In 1927 South Carolina and Montana had only 71 physicians per 100,000 people while California had 200. There is a great tendency for the recent medical graduate to shun the small place.

Nearly 20,000 physicians limit their practice to a specialty while as many others practice a specialty but do not limit themselves to it entirely. It is estimated that at least eleven per cent of all doctors are employed on a full-time salary.

In 1910 the number of clinics was 600; by 1926 the number had increased to 6,000. These clinics are maintained by hospitals, governmental and private health organizations, industrial and commercial establishments and charitable agencies. Among recent developments are mentioned the so-called "pay clinics" and "group clinics."

The brochure from which we obtain these data is an abstract of a ninety page report which is doubtless interesting reading. The tendency is away from private independent practice of medicine to practice by the group or under group control whether it be clinic or industrial or commercial institution.

"SURGICAL BABBITTS"

Under this heading the American Journal of Surgery vents its feelings on those so-called surgeons who descend upon the European Clinics en masse and from their actions get American surgery in wrong with the medical and surgical profession of of European countries. The groups consist, not of representative American surgeons, but of "very mediocre practitioners," not even outstanding in their own counties. Continues the American Journal of Surgery, "They have done no studying since graduation from medical school, they read almost nothing, neither do they do any research, add to the literature, visit home clinics or take postgraduate courses. They enjoy large practices or have made a fortune in real estate or the market. * * * Enterprising members of the profession of the go-getter type organize clubs, groups, societies much on the style offered by any well known travel agency to visit foreign countries and see 'all the clinics.' Thirty to a hundred medical Babbitts who have no idea what it is all about and care less, 'sign up' and in a gay mood depart for distant shores. * * * Herd-like they would descend on a place and overrun it, strain their necks to see all. and were mainly interested in taking moving pictures of everything; the operators, the nurses, in the 'queer' looking uniforms, etc."

The well qualified surgeon, like the true traveler, does not attract attention. Much has been written about the vociferous tour-

SEND IN YOUR ORDER FOR TWO VOLUMES OF MICHIGAN'S MEDICAL HISTORY

ist, and one or two in a shipload can do more to give this country an unenviable reputation in the minds of the European than a whole ocean liner full of orderly quiet citizens of the United States can do to redeem that reputation. Those who would visit foreign clinics with a seriousness of purpose would do well to consider carefully such groups as the Editor of the American Journal of Surgery describes. The independent traveler whether a physician looking in on foreign clinics or merely a traveler in a nonprofessional capacity will get a great deal more satisfaction than by being one of a crowd.

THE PSYCHOLOGY OF THE DELINQUENT CHILD.*

Professor Adler's method is essentially one of medical case study; therefore he believes that each problem should have medical control. The home and the school furnish preferred influences. In the program of disciplines the teacher is invaluable. It is exceedingly important to arrange for appropriate relations between the child and society at large.

When the environment of home and school and the ordinary contacts with society are inadequate to cope with the more difficult problems like those presented in the child whose tendencies are indicative of future criminality, small institutions accommodating groups not larger than twenty, and directed by experts, are advised. These places should be called recuperation homes; here the delinquent child could be taken for intensive training for a period of two or three months.

The simplicity, reasonableness and practical application of Professor Adler's methods are certainly to be commended. The keynote in the development of his anticipated results when expressed by one word is *cooperation.* The system is both unitary and communal. Effort is first directed to the child, the central unit, and all training must follow the path of securing the appreciation of the child that he is not the center of attention and a receiver only. He should be taught to give as well as to take, and that giving of himself to others is normal and helpful, while always taking in a selfish way from others is abnormal. The child who always insists upon being the center of attention and attains his desires, is a pampered child. The only child of the family is likely to be of this type. The first born, or the last born, may frequently have similar tendencies.

The parent, the teacher and the physician are each advised to use the child's earliest recollections as a means to reveal tendencies and styles of life.

Inquiries are advised as to what the child wants to be; whether he would prefer to be a boy or girl; whether he would prefer to be a person, dog or fairy; as to what makes him afraid; and what personal habits he has used as means for compelling attention.

In some children "bet-wetting" is a familiar example of this type of habit. When the child has a compelling desire for attention, he should be taught that his good qualities rather than the bad are all that will secure attention.

The delinquent boy or girl easily learns the technic of getting parental control through specializing upon certain influencing habits. The less intelligent the parent, particularly the grandmother and mother, the easier the conquest. If the child's habit worries the parent, it is a sure sign the child is in control.

JAMES E. DAVIS, M.D.

*Dr. Alfred Adler of Vienna, Austria, delivered a series of five lectures before the Medical profession of Detroit during the latter part of January. The series was made possible by the Senator Couzens fund.

EDUCATION BY DISCUSSION

The New England Journal of Medicine, in a recent number, commented upon a statement by Muirhead to the effect that in the United States discussion as a method of promoting knowledge did not exist. By discussion is understood a calm, dispassionate exchange of ideas with the object of arriving at truth, or as near truth as possible. Concerning most questions the American, according to this writer, either knows it all, or is not at all interested. In either case discussion is out of the question. It is not that we do not talk. Take for instance the perennial subject prohibition—enough is said, but there is practically no modification of our attitude regarding it, whichever side we happen to favor.

The editorial in the New England Journal of Medicine relates that a proposed meeting of physicians to discuss birth control had to be given up because it was thought that such discussion would divide the profession and wreck a certain county

Medical Society. Medical education is another topic that evidently is not amenable to discussion in the East.

Probably the lack of disposition to indulge in calm deliberation is a national characteristic. It may be due to climate or what not. More than one European observer has commented upon the spirit of intolerance that is apt to be accorded any vital subject in this country. A subject that is purely academic is apt to be met with lack of interest or indifference.

And yet we look forward to conferences, Leagues of Nations, world courts as a means of preventing future conflicts. It would seem that the remedy would be in a greater use of debate, especially in the discussion of such subjects as admit of difference of opinion. This would include so far as medical societies are concerned all topics of a medico-social nature. Debate properly conducted demands a sort of intellectual sportsmanship that should prevent cleavage in any group of intelligent people.

TUBERCULOSIS

Tuberculosis remains a major problem in Michigan, not having diminished in intensity to the same degree as it has in some of the Eastern States. We are faced primarily with the lack of institutional accommodation. It is generally accepted that sanatorium care is necessary in a large proportion of tuberculous patients to carry out the thorough details of proper treatment. The patients are thus educated not only as to how to continue treatment at home but, what is equally important, how to prevent infecting others in the household. This year's slogan for the National Tuberculosis Society's educational program is "Protect the Children from Tuberculosis"—a very worthy one to say the least. Though we are now vaccinating a very limited number of young children against tuberculosis, vaccination is in the experimental stage, and it will be some time before this procedure can be used as regular routine. Thus we are still confronted with our age-old problem in Michigan—removal of the source of contact in a large number of active tuberculous patients to prevent the children from being infected and, what is perhaps even more important, from receiving overwhelming doses of infection. This can only be procured by a sufficient number of beds being available for hospitalization of the adults as the source of contact. We also lack sufficient sanatorium beds for children. The Dubois Health Center (Detroit) demonstration showed conclusively that contacts (both children and adults) kept under careful continued observation—hygienic, social, economic—will not break down with the disease.

Tuberculin skin testing and radiographs of the chest are indispensable in making the diagnosis of tuberculosis in children. These tests should be carried out wherever there is contact with open tuberculosis and in all cases of suggestive symptoms, irrespective of the presence or absence of physical signs in the lungs. The X-ray has the added value of showing the actual progress of the disease and should be repeated as indicated.

—D. S. BRACHMAN, M.D., D.P.H.

THE EDITOR'S TROUBLES

Probably nearly everyone who reads medical Journals has been a contributor at some time or other, or contemplates being one. There are a few matters in regard to the preparation of copy for the printer which if borne in mind would greatly assist in getting medical or scientific papers to the readers in a condition gratifying both to the writer and reader, and we might also say to the editor as well. We do not refer to the matter of grammar, punctuation or spelling but assume that the prospective writer is efficient in these things.

Most Journals (and we are speaking for ourselves) prefer that all copy be typewritten, double space, one side of the paper, with good margin on the left hand side. The ordinary business letter-head paper 8½x11 inches is a very convenient size and, since most writers use this, it is apt to be uniform. Occasionally papers are received without the author's name; this entails, of course, loss of time in search for the writer. The author's name, University degrees as well as his address, should be a part of every contribution. The different pages should be fastened together so that there is no possibility of becoming detached and therefore lost. The ordinary clip that is slipped over the corner is not satisfactory. Again, the copy sent to the editor is often a second or third carbon, more or less smudged at that. The author should send the original and keep the carbon in case the

original be lost or mislaid. The original paper if accepted is not returned to the author. He has the opportunity, however, to make corrections with alterations within reason on the galley proof. His original copy, however, belongs to the editor if accepted, in much the same way as the original prescription is the property of the druggist.

Lastly, a word in regard to illustrative material. Illustrations usually consist of two kinds, either half-tones or line drawings. These are expensive to produce, the price being the same no matter where made in the United States. They should therefore do duty as *real* illustrations. A cut that is more or less indifferent serves no useful purpose. Even fairly good X-ray films when printed and reproduced as photo engravings show less detail than the original. The original X-ray negative contains the greatest amount of detail, a print from it shows less and an electrotype less still, hence the advisability of using X-ray films in which the detail is beyond question. Editors frequently receive illustrative material without any mark showing to whom it belongs. All such material should be marked as distinctly as the author's original paper with the name of the paper (on the back), the name of the author and the number and sequence of the illustrations, if there are several, and the legends all distinctly typewritten.

These are a few of the items which would-be medical authors will do well to bear in mind.

SCINTILLATIONS

An economist is a man who tells you what to do with your money—after you have done something else with it.

Backbone won't get you anywhere—if the knob at the top of it is made of the same material.

Experience—that's what you get when you are looking for something else.

Hard times—a season during which it is very difficult to borrow money to buy things you do not need.

An income—something you can't live without or within.

It is easy to meet expenses these days—they can be met everywhere.

A man and a motor are alike in one way—too much knocking indicates that something is wrong.

There is one law which is fully enforced—the law of gravity.

The fellow who puts his wedding off until times get normal is apt to get normal himself.

Why do they call it a shipment when it goes in a car, and a cargo when it goes in a ship?

An optimist—someone who can always see the bright side of the other fellow's misfortune.

—*Goodmethod Talks.*

THE BREED OF MEN

You talk of your breed of cattle
And plan for a higher strain,
You double the food of the pasture,
You heap up the measure of grain;
You draw on the wits of the nation
To better the barn and the pen,
But what are you doing, my brother,
To better the breed of men?

You talk of your roan-colored filly,
Your heifer so shapely and sleek,
No place shall be filled in your stanchions
By stock that's unworthy and weak.
But what of the stock of your household,
Have they wandered beyond your ken
Or what is revealed in the round-up
That brands the daughters of men?

And what of your boy? Have you measured
His need for a growing year?
Does your mark of his sire on his features
Mean less than your brand on a steer?
Thoroughbred—that is your watchword
For stable and pasture and pen,
But what is the word for the homestead?
Answer, you breeder of men!

—Anonymous.

THE DOCTOR'S BUSINESS

(New York Sun)

"Public health has taught us that one man's health is everybody's business," writes Dr. Ray Lyman Wilbur, officiating not as Secretary of the Interior but discussing medical progress in an economic world in *Medical Alliance Review*. Dr. Wilbur charges that his profession neglects the business of medical practice and urgently needs the assistance of economic advisers.

An organized world of business, by its dominating influence, has wrought in medicine changes which that profession, preoccupied with purely scientific progress, has failed to observe. "Medicine stumbles ahead as a great social factor led by a few far-seeing individuals, prodded by a lot of uplifters, legislators and enthusiasts," Dr. Wilbur declares. He proposes a study program on the cost of medical care with the aim of formulating standards of business practice, and would seek the guidance of social workers and economists. He holds that "some plan must be devised so that official snoopers will not be projected between doctor and patient," and warns that

"The golden thread of human understanding and of close personal relations between doctor and patient may be left out of the new social fabric which is being woven right under our eyes."

But one of the chief criticisms leveled at doctors by this member of the profession is on the score of their uneconomic system of fees. He asks curtly: "What other business has a sliding scale of charges varying from $25 to $10,000 for the same service?" and reminds his colleagues that free work and uncollected bills form a large item in the accounts of the average physician.

Like artists and some kinds of musicians, doctors do not devote sufficient care to their practice as a business, it would appear from these charges. They are too satisfied to depend on a secretary or other assistant for financial advice. They err on the side of altruism. Dr. Wilbur's argument that medicine has proved itself too valuable for society to allow it to be inefficient and inadequate in service may sound like a strong rebuke, but it is unanswerable.

THE EDITOR'S EASY CHAIR

THE LIVING PAST

"To become historical-minded is to attain intellectual majority."—J. H. Robinson.

"Only the past can furnish the key for an understanding of things of the present."—Sudhoff.

"He who cannot render an account to himself of at least three thousand years of time will always grope in the darkness of inexperience and merely live from day to day."—Goethe.

And so we might continue indefinitely. Whatever may be said of the literary output of the past twenty-five years, a great deal of it has been historic and biographic. In this age of progress or rapid change as you will, we are disposed to look to the past more than at any other similar period in recorded history. Mankind is groping for guidance. Within the past decade the medical profession has turned its attention to medical history and it is being made a subject of undergraduate instruction in many medical colleges. In some cities the medical profession have their medical history clubs. Several Medical Journals of national scope have made it a regular feature. May we look upon this as evidence that the profession is attaining its intellectual majority.

If we only stop to think of it we are the willing adherents of the past. To quote a great historian: "The imagination of the most radically minded cannot transcend any great part of the ideas and customs transmitted to him." According to Marvin, who coined the felicitous expression, "The Living Past," the pious Japanese believe that the spirit of an ancestor is more powerful than that of his living representative on earth. To realize and acknowledge the link that binds one to him is a primary duty; to carry on and extend his fame would be one's greatest glory. Thinking backward has accompanied and inspired a new and passionate effort for living forward.

SCIENCE TO THE FRONT

Time was when the name of Harvey was omitted from history and that of Newton was mentioned only as master of the mint and Roger Bacon only as a Franciscan friar. Wars were given undue prominence and disease and the struggle for existence practically none at all. The time has come when science has demonstrated its effectiveness in the preservation of the race through increased production of foods, through sanitation and preventive medicine. The modern historian has come to recognize the superiority of peaceful revolution or evolution as contrasted with bloodshed. Hence that branch of world history which has come to be known especially as the account of man's effort toward race conservation assumes a new importance.

The study of medical history may be undertaken for both pleasure and profit; for profit, inasmuch as it enables us to see the present in its proper perspective. It becomes, like the study of general history, the solvent of prejudices, which gives our thinking a necessary freedom. For pleasure, inasmuch as the story of medicine is replete with human interest. It is the story of the development of the race, including its beliefs and superstitions. Not only have we the great epochs of medical history but likewise the biographies of great men, as great as in any other department of human knowledge. The reader of history in general as well as of medical history is a traveller in time, a tourist so to speak to the past, as the modern traveller is an interested visitor to foreign lands.

MICHIGAN MEDICINE

How shall we begin? Logically, at home. Let us read the history of medicine as revealed within our own State. The first volume of The Medical History of Michigan will appear shortly, after over three years spent on its writing and compilation. This history among other things contains chapters on Public Health, Hospitals, Training Schools for Nurses, Medical Defence, Medical Education, Medical Journalism, State Hospitals, The American Indian, His Medicine, Physicians with the Early Explorers and Adventurers, Eighteenth Century Physicians, Therapy Then and Now, Women Physicians, and Medical Societies. Dr. C. B. Burr, the editor and historian, has aimed to make this History anecdotal as well as serious and to reveal the accomplishments and influence of the medical profession in the early development of the State. The intimate contact of Dr. Burr with many prominent physicians of the nineteenth century has enabled him to rescue from oblivion incidents which might otherwise have been buried with those most intimately concerned. These two volumes when complete embody the plain, the piquant, the controversial in the social aspects of medicine, rendering the history at the same time readable and entertaining. The fathers of medicine in Michigan from Beaumont to McGraw have been dealt with by a discerning mind of unique ability to do justice to such a subject. The History deals also with the exploits of the doctor in war as well as in peace, for the Michigan doctor has been present in at least three wars, two of which have ranked among the decisive conflicts of the world.

AMERICA CONTRIBUTES

Next to this, Medicine in the United States by Packard, is an interesting volume. This book published about thirty years ago is concerned with the subject from the time of the American Revolution to the discovery by Long of Ether Anesthesia. American medical history may be supplemented to a certain extent by the contributions on the subject that appear in the Annals of Medical History edited by Packard and published by Paul B. Hoeber. The Annals of Medical History, which appears every two months, is history in the process of compilation. It is hoped that the author and editor may find occasion to bring Medicine in the United States up to date, truly a gigantic task.

In the history of general medicine both at home and abroad the volume that will be thought of immediately is History of Medicine by F. H. Garrison. Garrison's work is perhaps the best single volume history of medicine in existence. It deals clearly with the personalities who from the remote past have contributed to medicine up to the present time. It is rich in biographical detail.

An introduction to the History of Medicine by C. G. Cumston deals with the subject from the time of the Pharoahs to the end of the eighteenth century. The treatment is somewhat philosophic and takes a good deal for granted. The book will be better appreciated after the reader has obtained his historical foundation from one or two of the works giving the subject in greater detail. The Growth of Medicine from the Earliest Times to about 1800 by Albert H. Buck covers about the same field. It is a scholarly work which will repay careful study.

THE WORK OF SUDHOFF

The essays in the History of Medicine by Sudhoff

translated by Garrison and eleven others is a valuable addition to anyone's historical library. Garrison says in his biographical sketch of the author that Sudhoff is easily the greatest and most accomplished of all medical historians, the only one who has that mysterious natural faculty which Carlyle calls genius. The work is a collection of essays, forty-eight in all, on a great variety of subjects.

The writer would not feel at ease in his chair if he were to omit mention of the great contributions to medical history by Osler. There is no one in the English speaking world who has done more towards the encouragement of the medical historian than Osler. He was in the truest sense historically minded. Not only did he himself write, but he was an inspiration to others. Part of the charm of Osler's textbook on the Practice of Medicine was due to his historical treatment of the various subjects. Osler's work is about the only history of disease we have, that is, a book that deals with the history of disease apart from the personalities of medical history. The work of Moody on Paleopathology is the most original and exhaustive in existence on the subject of disease in prehistoric times. Osler's Evolution of Medicine is well illustrated and presented in the same unexampled diction of his textbook on medicine and his volumes of essays such as Equinamitas and the Alabama Student.

Another writer who as medical historian has a strong appeal to me is Dr. Charles Singer. His studies in the History and Method of Science is a monumental work in two volumes. Unfortunately the first volume is out of print and procurable only in the larger libraries. Singer's Short History of Medicine (1928) fills a distinct place among works of this class. It appeals to the educated layman as well as to the medically trained person. While surveying the subject from early Greek times, more than half the work is devoted to modern medicine. Singer has presented essentially a history of ideas keeping the personal element entirely in the background. It is in a sense an account of the evolution of the scientific method.

The Peaks of Medical History by Dr. Charles R. Dana is a splendid epitome of medical history dealing in a broad way with the various well defined epochs. This and a number of monographs, The Gold Headed Cane, Montaigne and Medicine, Laennec, Harvey, published by Paul Hoeber, are interesting contributions to the subject. Dana's book together with Osler's Evolution of Modern Medicine are splendid works for the beginner in Medical History, presenting as they do a succinct survey of the subject.

These are only a few works on this important subject. There are many others as well as works dealing with the evolution of various medical and surgical specialties. The personal library of every physician should contain one or more good works on medical history—something on general and one or two on his specialty. These are the only medical books in his possession that never become obsolete. Money spent on the history of medicine is a permanent investment.

J. M. Dempster

HIGH SCHOOLS SHOULD HAVE BEST TEACHERS, SAYS PHYSICIAN

The best trained educators should be working in high schools, guiding boys and girls through the important stage of adolescence, rather than teaching college students, who are not nearly so teachable, in the opinion of Dr. Daniel J. McCarthy, neurologist and professor at the University of Pennsylvania. "The beneficial effect of education in the average student does not extend beyond the eighteenth or nineteenth year," Dr. McCarthy states, basing his conclusion on his impressions from tests made while he was quiz-master in the medical school. "In dealing with the average mind, a specialized type of education in the later years disciplines the mind and thereby increases its efficiency, but does not increase inherent brain power."

Dr. McCarthy's tests at the medical school showed that students admitted to the medical school from high schools showed as high brain efficiency as college graduates who entered the medical courses. All of these students were from twenty to twenty-four years of age, and their brains were fully formed.

In the ideal educational system, boys and girls in their teens would be taught in small classes by highly trained teachers, Dr. McCarthy concludes.

—Science Service.

CHEMICAL MUFFLER REMOVES DEADLY AUTO GASES

A chemical device to replace mufflers on automobiles that will eliminate the deadly carbon monoxide contained in the exhaust gases has been developed by Dr. J. C. W. Frazer, professor and chairman of the department of chemistry at Johns Hopkins University, Baltimore. Since carbon monoxide, odorless, colorless, tasteless and poisonous swiftly in small concentrations, claims many lives each month through the carelessness of automobilists failing to open garage doors before warming up their engines, this latest chemical achievement is hailed as an important step in making the machine age less dangerous. Dr. Frazer declared that an automobile equipped with the new oxidizing device could be run in a closed garage without danger from carbon monoxide poisoning. Because of patent claims, he has not yet revealed the exact nature of the material that transforms the deadly carbon monoxide to carbon dioxide. But it is known that it is a catalyst, a substance that causes a chemical reaction without itself participating. It is similar in action to the catalyst, consisting of manganese dioxide and copper oxide, that was an outgrowth of chemical warfare work by Dr. Frazer and a laboratory staff during the World War. Fire departments and mine rescue squads use gas masks today that rely on this wartime catalyst for purifying the air of carbon monoxide.

For a year and a half, Dr. Frazer worked to develop the new catalyst that will add oxygen to carbon monoxide even when in direct contact with hot, moist gases. Laboratory tests and thousands of miles of road testing convince him that a canister of the catalyst substituted for the regulation muffler will not only deaden the noise of the engine explosions but remove all the unburned fuel gases in the exhaust, the ill-smelling ones as well as the deadly carbon monoxide. As about a third of the fuel is unconsumed in the engine cylinders, the small canister of catalyst has the task of burning half as much fuel as the engine does. Heat from this reaction may be utilized in some way in future installations, such as for car heating or preheating the fuel.—Science Service.

NEWS AND ANNOUNCEMENTS

Thereby Forming Historical Records

American Medical Association, Detroit, June 23-27.

Dr. George McKean, of Detroit, is spending two months in California.

Dr. B. R. Corbus, of Grand Rapids, has returned from a month's vacation in Florida.

Dr. Angus McLean has returned home from six weeks' visit in Del Monte, California.

Dr. R. R. Smith, Grand Rapids, is expected to return this month from a Mediterranean tour.

One-Hundred and Tenth Annual Meeting Michigan State Medical Society, Benton Harbor, Sept. 15, 16, 17, 1930.

Be sure to read the announcement of the second intensive post-graduate course to be given in Detroit in June.

Dr. F. C. Warnshuis, Grand Rapids, addressed the East Side Physicians' Society of Detroit on "Organized Medicine" Feb. 26th.

Dr. R. D. Sleight, of Battle Creek, has made a prompt recovery after the removal of his appendix and has resumed his practice.

Dr. J. M. Robb, of Detroit, was operated upon for inguinal hernia and also chronic appendicitis on Feb. 27th. He is taking a few weeks' vacation before returning to his practice.

Dr. John L. Chester, of Detroit, who has been confined to Providence Hospital for a number of weeks with a carbuncle on the back of his neck, is reported recovering satisfactorily.

Mr. Herbert B. Barbour and Judge Joseph J. Monyhan, of Detroit, addressed the Calhoun County Medical Society on Feb. 20th on the subject of medical jurisprudence and some phases of the leadership of the bar in society.

An order blank for Medical History was mailed each member during March. Only a limited order of copies will be placed with the printer. Do not court disappointment in not being able to secure a set. Send in your order before April 15th.

Dr. Hugh Cabot, Professor of Surgery at the University of Michigan since 1919 and Dean of the Medical School since 1921, has been made Senior Consultant in Surgery at the Mayo Clinic, Rochester, Minnesota. He is expected to enter upon his new work June 1st.

Dr. George C. Burr and Mrs. Burr, of Detroit, left on the 15th of March on the La France for a Mediterranean tour. They will leave the boat at Marseilles, France, and will visit Buda-Pesth, Paris and London, where Dr. Burr will take occasion to visit the clinics in which he is interested.

Dr. William C. Lawrence, of 1808 Stroh Bldg., Detroit, is Chairman of the Hotel Committee. Those expecting to attend the sessions of the A. M. A. will do well to communicate with Dr. Lawrence as early as possible so that the necessary hotel reservations may be made.

Dr. Austin Hayden, Marshall Field's Annex, Chicago (also treasurer of the A. M. A. as well as a recognized otolaryngologist), says that he has available for medical societies a 30-minute movie on Hearing Examination and Conservation which he made for the American Federation of Organizations for the Hard of Hearing.

Volume I, No. 1, of the Journal of the Detroit College of Medicine and Surgery has just come to hand. It is published by the Detroit Board of Education and edited by Dr. James E. Davis. This first number contains eight articles by members of the staff of the College. It is carefully edited and a credit both to Editor Davis and to the Detroit Board of Education.

A press report from Los Angeles, dated February 20, announces the acceptance from W. K. Kellogg of a sum of money to carry on the W. K. Kellogg Foundation for Cancer Research, in connection with the White Memorial Hospital. The item states that further experiments will be conducted with the serum treatment of Drs. Coffey and Humber, of San Francisco.—*Calhoun County Medical Society Bulletin.*

Among the articles in the first number, first volume of the Journal of the Detroit College of Medicine and Surgery are listed forty-four contributions to various medical and scientific publications, these contributions being the work of the faculty of the Detroit College of Medicine and Surgery during 1928. Of the total forty-four, eighteen have appeared in Volume No. 27 of the Journal of the Michigan State Medical Society.

One of the unique features in connection with the coming meeting of the A. M. A. in Detroit will be the opportunity offered members from a distance to arrive by aeroplane. Special rates of one fare and a half for the round trip from Chicago to Detroit and also from Buffalo to Detroit have been arranged and negotiations are about complete as we go to press for similar rates from more distant points in the United States to these two centers.

A get-together dinner was held by the East Side Medical Society of Detroit at Harmony Hall on the evening of March 6th. About two-hundred and sixty members of the East Side Medical Society and their guests were present. The out-of-town guests were Drs. J. D. Brook, President of the Michigan State Medical Society, Frederick C. Warnshuis, Secretary, and Dr. Pyle, Speaker of the House of Delegates. Mr. Harvey Campbell, Secretary and Vice-president of the Detroit Board of Commerce acted as Toastmaster. The guests were introduced to the Society and brief addresses were made by Judges Reid, Sweeney, McKinley and Guy Miller and Dr. Angus McLean as well as Representatives Culver and Milton Palmer and Mr. Harry Hulbert.

DEATHS

Word was received in Detroit on March 5th of the death of Dr. John Vernon White at the age of seventy years. Dr. White had practised for twenty-one years in Detroit as nose and throat specialist, having left Detroit for Coronado, California, about ten years ago. Dr. White had been in failing health for several years.

BRONCHOSINUSITIS DISEASE

W. W. Wasson, Denver, describes a clinical picture caused by certain inflammatory changes at the root of each lung. This portion of the lung seems to receive the force of the first attack of bronchosinusitis disease so far as the lungs are concerned. In young children in whom the disease is uncomplicated, there is found at first an inflammation of the mucous lining of the trachea and bronchi. Later this inflammatory reaction spreads to the surrounding tissue so there is soon an increase in the connective tissue which surrounds and binds together the bronchi, arteries and veins. The hilum of the lung soon becomes a mass of this connective tissue, and when viewed by means of the roentgenogram the inflammatory reaction is well limited to the hila. Later the congestion and fibrous tissue increase may spread outward along the bronchi and arteries to involve even the primary lobules. Since there is considerable drainage by way of the bronchi, the lymphatics are not especially involved and the increase in the size of the lymphatic glands is markedly absent. The roentgenogram has proved to be an excellent means of studying the pathologic changes in the living person, and the autopsies have verified the roentgenographic observations in a surprisingly high percentage of the cases studied. This inflammatory reaction in the hila, with an increase in the connective tissue even to the extent of obscuring the bronchi and great vessels and usually fairly definitely limited to the hila, gives a very typical roentgenogram. Such a typical roentgenogram when combined with roentgenograms of the sinuses showing definite pathologic changes presents a roentgenographic syndrome which is pathognomonic of bronchosinusitis disease. Such roentgenograms when verified by other studies definitely link together the entire respiratory tract. In fact, the roentgenologists may often foretell the conditions in the sinuses by the pathologic changes portrayed on the roentgenogram of the chest. The converse, however, is not true, as there can be sinus infection without the production of the typical changes of bronchosinusitis disease. Likewise there are varying degrees of the reactions at the hila of the lungs. The pathology of bronchosinusitis disease differs definitely from that of pulmonary tuberculosis. In the latter, the tubercle passes to the lymphatic nodes from the air cells and here sets up the typical tuberculous reaction as described by Krause. This reaction involves primarily the lymphatic system, producing congestion, fibrosis, calcification and caseations of the lymphatic glands, and some congestion of the air cells and bronchi. The first infection is nearly always in the periphery of the lungs with a reaction secondarily in the regional glands of the hila and mediastinum. There is therefore much more glandular increase at the hila and less connective tissue increase than in the typical case of bronchosinusitis disease.—Journal A. M. A.

EARLY DIAGNOSIS OF BRAIN TUMORS MOST IMPORTANT

"By far the most important part in the treatment of brain tumors is to suspect them in the earliest stage," declared Dr. Walter E. Dandy of the Johns Hopkins University, Baltimore, at the meeting in Panama City of the Pan American Medical Association. Dr. Dandy is one of America's foremost brain surgeons. These masses of new tissue which grow in the brain cause a number of serious brain disorders. Paralysis, mental or nervous disorders, loss of vision or of hearing are among the conditions which may result from brain tumors.

"Brain tumors are among the most common tumors of the body," Dr. Dandy said. "Every brain tumor causing symptoms can now be diagnosed and localized with such precision that the tumor can be found at operation. About one-half of all tumors can be diagnosed and localized by neurological examination. The other half can only be diagnosed and localized by the use of ventriculography. This method is perfectly harmless if used correctly; it is very dangerous if not used correctly."

To perform ventriculography small openings are made, under a local anesthetic, in the back part of the head on both sides, Dr. Dandy explained. This requires only a few moments and is painless. The fluid is removed from one of the ventricles or small cavities on one side of the brain and exactly the same amount of air is injected in its place. By moving the air through the channels in which the cerebro-spinal fluid circulates every part of the ventricular system can be seen on the X-ray plate. Every tumor causing signs or symptoms of pressure within the skull will in some way change the size, shape or position of some part of the ventricular system. Interpretation of these changes tells the location of the tumor. The shadows shown in the X-ray plate are due to the fact that air is of lesser density than the fluid which it replaces and the X-ray therefore picks up the shadows from these areas of lesser density.

If there is no obstruction to the outflow of air from the ventricles to the space where it is absorbed, there is no danger. The danger comes when the ventricles are obstructed and the air cannot pass out of the ventricular system and, therefore, cannot be absorbed. To avoid this danger it is necessary either to remove the air by another puncture, or better to remove the tumor immediately, thus automatically releasing the obstruction to the exit of air. For this reason air injections should be done only by the surgeon who is prepared to follow with the operation immediately, if necessary, Dr. Dandy advised.

There is probably no diagnostic field in medicine in which greater accuracy can be obtained than this, Dr. Dandy declared. He said that as a result of the new method of localization and diagnosis, new operative methods for finding and removing brain tumors in inaccessible positions have been developed.

—Science Service.

SMALLPOX THREATENS IN MIDDLE WEST

Serious concern is felt by state health officers over the unusual prevalence of smallpox which has existed in the middle western states since the first of the year, shown in reports received at the U. S. Public Health Service Washington. The latest reports are that there were 269 cases in Ohio, 226 in Indiana, 147 in Illinois, 108 in Iowa, 60 in Missouri, 90 in Michigan and 38 in Wisconsin. Vaccination is a sure preventive of this loathsome and dangerous disease. Communities in which universal vaccination is the rule need not fear outbreaks of smallpox.

—Science Service.

BOOK REVIEWS AND MISCELLANY

Offering Suggestions and Recommendations

The titles of all books received by the Journal of the Michigan State Medical Society will be given in this column; and the appearance here of mention of the book, author and publisher is regarded as adequate acknowledgment. Books considered of special interest to our readers will be reviewed at length in future numbers of the Journal.

THE MEDICAL CLINICS OF NORTH AMERICA—(Issued serially, one number every other month.) Volume 13, No. 4 (Philadelphia Number, January 1930). Octavo of 301 pages, illustrated. Per Clinic year, July, 1929 to May, 1930. Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

TREATMENT IN GENERAL PRACTICE—Harry Beckman, M.D., Professor of Pharmacology, Marquette University Medical School, Milwaukee, Wisconsin. Octavo volume of 899 pages. Philadelphia and London: W. B. Saunders Company, 1930. Cloth, $10.00 net.

The order of the subjects treated is the same as that of a standard work on the Practice of Medicine. Beginning with the section on infectious diseases which is alphabetically arranged we have discussed the treatment of about eighty pathological conditions. Then follow sections on Diseases Caused by Flukes, Diseases Caused by Worms, Diseases of Allergy, Deficiency Diseases, Diseases of Metabolism. Following these a large portion, over half the work, is devoted to the treatment of what might be termed diseases peculiar to certain regions of the body. There are sections on Acute Poisoning, Burns, Opium and Cocain Addiction, the various medicinal agents used in obstetric practice. The matter is well arranged and readily accessible.

That there is a place for such a work is beyond doubt. Many have deplored what they consider inadequate undergraduate training in the matter of treatment. This volume will go a long way to making up this deficiency. It shows evidence of careful preparation and the result of wide reading. There is a bibliography of over twenty pages comprising articles by a great number of the leading names in medical science the world over. The indications for the different therapeutic agents are discussed intelligently and at length. The subject of Therapeutics for the General Practitioner appears to be well covered.

RECENT ADVANCES IN MEDICINE, CLINICAL LABORATORY THERAPEUTICS—G. E. Beaumont, M.A., M.D., Oxon, and E. C. Dodds, M.D., Ph.D., Professor of Biochemistry, London; Fifth Edition with 49 Illustrations. P. Blakiston's Son and Company, Philadelphia, Pa. Price $3.50.

This is the fifth revision of this work since its first appearance six years ago. In the present revision certain chapters which appeared in former editions have been omitted and new sections have been added. Forty-three pages are devoted to tests of Renal Function. The modified Sippy treatment of gastric ulcer is given at greater length and typical diet sheets for different stages are presented. The treatment of diabetic coma has been simplified. The liver treatment of pernicious anemia has been dealt with in greater detail. Other alterations of the text of former editions have been such as recent progress in this field of medicine has demanded.

A TEXT-BOOK ON ORTHOPEDIC SURGERY. Willis C. Campbell, M.D., F.A.C.S., Professor of Orthopedic Surgery, University of Tennessee, College of Medicine, Memphis. Octavo volume of 705 pages, with 507 illustrations. Philadelphia and London: W. B. Saunders Company, 1930. Cloth, $8.50.

As stated by the author the purpose of this book is to present the subject of orthopedic surgery to the student, general practitioner and surgeon in a simple and comprehensive manner. The subject is dealt with under six different headings namely: I. Affections of Joints; II. Affections of Bone; III. Affections of Soft Tissue; IV. Affections of the Nervous System; V. Static Deformities; VI. Congenital Deformities. Some of the affections noted in this classification are not dealt with in most textbooks on orthopedic surgery, but because they are routinely treated by the orthopedist in his daily practice and taught by him in many medical schools he believes they should be included in a textbook on the subject. Two of the beginning chapters (about eighty pages) are devoted to orthopedic examination and apparatus. They are well illustrated by actual photographs and should be of special value to the general practitioner. Etiology and pathology are discussed in a simple and practical manner and particular emphasis is placed on differential diagnosis. All known methods of treatment and all types of operations are not discussed, but only those which the author has found most practical in his own experience. However, the principles of modern operative methods are defined and the technic is described in many instances. The more common affections, namely those which the general practitioner comes in contact with in his daily practice, are dealt with in detail rather than the rare conditions. This is a feature which makes the book especially valuable to those who are not specialists. The subject is covered in a very complete and simple manner in 666 pages containing 507 illustrations.

SUNLIGHT NOT GOOD FOR TUBERCULOSIS OF LUNGS

Heliotherapy, or treatment with the direct rays of the sun, in cases of tuberculosis of the lungs seems to be limited as to favorable results, Dr. Bernard L. Wyatt, of Tucson, Arizona, reported at the Minneapolis meeting of the American College of Physicians.

"It is clear that the series is too small for definite conclusions to be arrived at," Dr. Wyatt said after reporting his results with heliotherapy in some 200 cases of pulmonary tuberculosis, "but it is a matter of considerable interest that the number of patients showing appreciable improvement that might be attributed solely to direct heliotherapy was negligible."

Dr. Wyatt was careful to point out that because his studies were made under meteorologic conditions prevailing in southern Arizona, no generalizations would be drawn from them. Dr. Wyatt's experience with direct rays from the sun in treating other forms of tuberculosis was more gratifying, he reported. His observations on the limitations of this form of treatment in tuberculosis of the lungs was confirmed by the opinions of other authorities, he said.

"Sunlight which was formerly used extensively in Switzerland for the treatment of pulmonary tuberculosis, has been given up almost completely," he said, and also quoted a personal communication from Dr. Edgar Mayer of Saranac Lake, N. Y., who wrote: "As to the use of direct sunlight in pulmonary tuberculosis, I think that most of the reports have not been on controlled cases and therefore biased in its favor. We have given it a very fair trial here in the summer time and only in the rarest instances was I convinced that it helped."

—Science Service.

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SOCIETY ACTIVITY

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Frederick C. Warnshuis, M. D.
Secretary Michigan State Medical Society

Our Medical History

Following three years of diligent editorial research and writing by our Committee on Medical History, headed by Dr. C. B. Burr of Flint, our History is ready for the press. It is expected that the first volume will be ready for distribution in April. Dr. Burr has in his own inimitable language and way compiled a most intensely interesting history of our Society and the profession in Michigan. It is written in very fascinating style. It includes the earliest days and records and in our opinion compares favorably with any published history of any state. It is not a dry biography of men and events. It is a scholarly, literary composition.

Every member will want a copy for his library. Your order is solicited now in order that we may determine how many copies to print.

The second volume will appear during the early summer. Each volume will contain about 800 pages well illustrated. The price is $10.00 for the two volumes. Five dollars is to be sent with the order and the balance when notified that the second volume is ready for delivery.

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A. M. A. FELLOWSHIP

Attention is again directed toward the classification of American Medical Association affiliation. By virtue of your membership in your county and state medical society you are a *member* of the A. M. A. Unless you are a *Fellow of the A. M. A.*, you cannot register at the Detroit meeting. You will be denied admission to the Scientific and Commercial Exhibits. You cannot participate in the scientific sectional meetings nor can you gain admission to the social functions.

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The Detroit session promises to be an outstanding one. No Michigan physician can afford foregoing attendance. A. M. A. annual sessions excel all other national meetings. Other national meetings charge a registration fee of from five to ten dollars; the benefits cease on termination of the sessions, which are never as profitable or instructive as the annual meeting of the A. M. A. By becoming a *Fellow of the A. M. A.* your annual dues permit you to participate in the annual meeting, it gives you weekly the *Journal of the A. M. A.*, than which there is no better medical journal, and you are supporting your parent national organization that is persistently and continuously functioning for your interests.

Send in your application today. Blanks may be secured from your county secretary. Remember, unless you are a *Fellow* you will be unable to attend the Detroit session.

ILLEGAL PRACTICE

That our laws governing the right to practice are frequently violated is not denied. Violations exist and violators persist in their illegal practice. Inquirv is frequently made as to why these violations are allowed to go on without prosecution and law enforcement. The answer is simple: the prosecuting attorney of your county and the police powers of your county fail to enforce the law and fail to apprehend the guilty parties.

Our medical act places the enforcement of the law in the hands of the local prosecuting attorney. The Board of Registration has no power to enforce the law. When information comes to the Board that the law is being violated the Board places the information in the hands of the county prosecutor. The Board can do no more because the law limits its powers.

Obviously your State Medical Society can not function as a police power of the state. It cannot undertake investigations or prosecutions. It places its information of violations in the hands of the local prosecutor and there its activities cease.

The burden of enforcement rests upon your county prosecuting attorney. If violations exist in your county that fact should be drawn to the attention of your prosecutor and be accompanied bv an urgent request that he institute the proper procedure to bring the violator into court. Individuals dislike to file complaints. County Societies should, therefore, as a group, through its officers or through a special committee interview your prosecuting attorney and request him to enforce our medical practice act in your county.

PORTER NARCOTIC BILL

Representative Porter of Pennsylvania is sponsoring "Bill H. R. 9054," a proposed penal statute to further control the administration of opium and morphine. If this bill is passed it will require every doctor to apply for another license in addition to his Harrison Narcotic license. But that is not the worst feature. The bill creates a Narcotic Bureau with a Commissioner at its head. The Commissioner is invested with almost unlimited authority. He can arbitrarily decide who shall receive a license, he can revoke licenses at will, he can demand what reports he wishes, he can subpœna you and your records at will and in any part of the countrv, he can prescribe such rules and regulations as his fancy determines. The law would place an intolerable burden upon every doctor.

If the bill gave any promise of being effective and would control opium smuggling and addiction, we would be inclined to waive objection. The proposed bill, however, does not provide any meritorious measures nor does it provide anv additional means to control opium traffic. All that it does is to create another Bureau and places upon doctors intolerable regulations. Existent laws, en-

forced, are ample and are sufficient to control opium traffic. Additional laws are not required.

Those who are concerned with the opium problem are apparently visionary in their conclusions. Without supporting evidence or figures they assert many things and lay the blame for addiction at the door of the medical profession. Actual facts refute this assertion and place the blame upon smugglers and illegal diversions. Let these proponents become insistent upon rigid enforcement of existing laws and then the main factors causing opium addiction will be under control. An autocratic opium commissioner is uncalled for.

Therefore, every member is urged to write to our Michigan senators and congressmen, protesting the passage of H. R. 9054 and urge that the measure be defeated. File your protest today.

MINUTES OF THE MARCH MEETING OF THE EXECUTIVE COMMITTEE OF THE COUNCIL OF THE MICHIGAN STATE MEDICAL SOCIETY

The Executive Committee of the Council of the Michigan State Medical Society met in Joint session with the Chairmen and Secretaries of the Scientific Sections at the Book-Cadillac Hotel, Detroit, March 17, 1930.

Present:

Chairmen—R. C. Stone, J. D. Bruce, B. R. Corbus, G. L. LeFevre, Henry Cook, J. H. Charters; president, J. D. Brook; editor, J. H. Dempster; secretary, F. C. Warnshuis, and the section officers.

Considerable time was spent discussing the features for the scientific program for the annual meeting.

1. On motion of Corbus-Cook, September 15, 16 and 17 were designated as the dates for holding our annual meeting in Benton Harbor and St. Joe.

2. On motion of Corbus-Bruce, the section officers were directed to restrict the number of invited essayists before their respective sections to two men whose total mileage of travel should not exceed one thousand miles. The secretaries, however, are privileged to invite three or four men as guests of their section, provided their mileage did not total more than one thousand miles.

3. Approval was granted to a recommendation by section officers that a symposium be held in the morning of the second day on the subject of Peptic Ulcer, in which symposium the sections on Surgery and Medicine will combine.

4. The Secretary presented a communication from the Ingham County Medical Society in which they surrendered their charter as a county organization. Upon motion of Le Fevre-Bruce the Secretary was directed to cancel the charter of the Ingham County Medical Society.

5. Upon motion of Bruce-Cook, the Secretary and the Chairman of the Council's committee on county society work

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were instructed to confer with Councilor Green relative to the arrangement of the proposed Post Graduate Conference in his district to which a number of out-of-state guests had been invited.

6. The Secretary reported upon the slowness with which subscriptions were coming in for the Medical History. Upon motion of Corbus-Le Fevre, the Secretary was instructed to take up with the County Secretaries the question of individual solicitation of their members for subscription to this history.

7. The Secretary presented a communication from the Council of the Wayne County Medical Society in which the Council was petitioned to make an appropriation of funds to the work of the Wayne County Medical Society. Upon motion of Le Fevre-Cook, the Secretary was instructed to review in detail the experiment that had been conducted and to call the attention of the Council of the Wayne County Medical Society to the last communications that had been addressed to them, and to further advise them that the experiment terminated in January, 1929, and that the funds of the Society, due to the obligations that had been incurred and the activities that are being conducted, do not permit the State Society to make any further contributions to the treasury of the Wayne County Medical Society.

8. The question was raised as to the Legislative program of the State Society. After considerable discussion the Secretary was directed to invite Dr. Sundwall, Chairman of the State Legislative Committee, to attend the next session of the Executive Committee.

9. The Secretary presented a communication from the National Food Bureau requesting the State Society's endorsement of its educational campaign to be conducted in Michigan in April. Upon motion of Cook-Corbus, the Secretary was directed to convey to the National Food Bureau its organizational endorsement of this campaign.

There being no further business the meeting adjourned at 10:40 P. M.

F. C. WARNSHUIS,
Secretary.

DUES PAYABLE

Members are reminded that their 1930 dues are payable by April 10th. Unless they are remitted by your county secretary by April 25th you will be placed on the suspended list. Suspended members are without legal protection during the period of suspension and the Journal is discontinued. Please obviate such a necessity. Send your check to your county secretary today.

HISTORY SUBSCRIPTIONS

The response to the announcement that the History of Medicine in Michigan had been sent to the printers and that advance subscriptions were requested has been very disappointing. Members apparently failed to realize that advance subscriptions were essential in order to determine the number of sets to be ordered from the printer. There will be no second printing. The number of sets ordered will be limited to the subscriptions received.

It is quite certain that when you see the set you will want it for your library. It will be impossible to secure a set if you failed to subscribe. It becomes imperative to send in your subscription in advance. Send in your order today.

GOOD WORK

The East Side Physicians Society of Detroit held its annual Stag Dinner on March 6. Some three hundred Detroit physicians were present. Their guests included the Mayor, Judges of the Detroit bench, Legislative representatives, some state officials and prominent business men. It was a most enjoyable occasion. This begetting of acquaintanceship between the profession and public officials will lead to a better understanding of our mutual problems. Other localities should pursue a similar plan. Congratulations are extended to this East Side Society for this good work.

COUNTY SOCIETIES

GRATIOT-ISABELLA-CLARE COUNTY MEDICAL SOCIETY

The February meeting of the Gratiot-Isabella-Clare County Medical Society was held in the Wright House, Alma, Thursday, February 20th.

Dinner was served to sixteen members and three visitors.

The minutes of the previous meeting were read and approved. President Budge then introduced Dr. Grover C. Penberthy, whose subject was "Empyema." The doctor described what he called the conservative surgical treatment of empyema in children, which in brief is the removal of the fluid or pus without allowing air to enter the pleural cavity, thereby preventing pneumothorax. A catheter is introduced through a trocar, a clamp is kept on the catheter, except when suction is applied. The subject was illustrated by slides. Then some questions were asked Dr. Penberthy.

President Budge next introduced Dr. E. C. Davidson, whose subject was "The Treatment of Burns in Children." The doctor gave some statistics as to the most common causes of burns in children and then took up the treatment. First, efforts are made to prevent shock; if present, it is treated by introducing saline, either subcutaneous, intravenous or rectal. The burned area is cleaned of all dead or loose tissue and sprayed with a 5 per cent aqueous solution of tannic acid every 15 minutes until it turns brown and forms a covering about like parchment paper. This is left on until it comes off easily, usually from 14 to 21 days. If epithelization has not taken place by this time, skin grafting is done. This subject was well illustrated by slides.

After a short discussion President Budge, on behalf of the Society, thanked the doctors for these very interesting papers.

Meeting adjourned.

E. M. HIGHFIELD, *Secretary.*

LENAWEE COUNTY MEDICAL SOCIETY

Regular meeting of the Lenawee County Medical Society at the Adrian City Club, Thursday, February 20th. Fourteen members present. This meeting followed an all-day Tuberculosis Clinic at the Adrian City Hall under the auspices of the Michigan Tuberculosis Association, conducted by Dr. Toan of the Association and Dr. Hudson of Detroit, who is specializing in the surgical aspects of the treatment of tuberculosis.

Dinner was served at seven. In the absence of President Marsh and Vice-President Veazey, the meeting was called to order by the Secretary. After a short business session, the members with their guests retired to the third floor of the Club. We were very glad indeed to welcome as guests Dr. Fenton of Reading, the veteran Secretary of the Hillsdale County Society, and his son-in-law, Mr. George Schermerhorn of Reading. Dr. Fenton, though in the eighties, is still hale and hearty and in very active practice. It was a special pleasure to welcome him to our midst in view of the fact that he made the long drive to Adrian and returned the same night especially to attend this meeting. We wish this might serve as an inspiration to some of those far younger who find it hard to attend their County Society meetings regularly because it is so far to go when they are tired.

Dr. Hudson, assisted by Dr. Toan, showed some very fine slides of foreign bodies in the bronchi, and tuberculosis of the lungs. This was followed by moving pictures of the lungs during the act of respiration in the opened thorax of a dog, demonstrating the rotation of the lungs. Then there were slides showing the possibilities of surgical relief in unilateral tuberculosis, by putting the lung at rest through artificial pneumothorax and thoracoplasty. Finally we were shown some moving pictures, taken through an X-ray apparatus, of a lung in which some of the bronchi had been injected with lipidol. These demonstrated the original research of Dr. Hudson on the way the bronchi emptied themselves of their secretion by rhythmical muscular contractions of their muscular coats, and not by coughing alone as had been supposed.

Great satisfaction was expressed by several members with Dr. Hudson's pictures and his lucid discussion of the problem of tuberculosis in what had been one of its most hopeless forms.

C. H. WESTGATE, *Secretary.*

KALAMAZOO ACADEMY

Following the regular monthly dinner the meeting was called to order by the President, Dr. J. C. Maxwell.

Dr. A. H. Rockwell asked for coöperation of the Academy in instituting some method whereby immunization for diphtheria could be carried out more intensely in Kalamazoo. The method he thought practical was to establish clinics in schools, for both school and pre-school children. These to be conducted by the physicians, who would receive remuneration for their work. No definite action was taken on his suggestion at this meeting.

Dr. C. J. Ettinger, Professor of Sociology, Western State Teachers College, gave a talk on the "Philosophy of Conflicting Opinions."

The minutes of the previous meeting as printed in the bulletin were approved.

There were no committees to report.

A communication from Dr. Collisi of the committee on industrial relations was read. Dr. F. E. Andrews called attention of the Academy to a report of this committee which recently appeared in the Michigan State Medical Journal. Dr. Andrews moved that the society investigate to ascertain whether or not the former committee on industrial relations was now active. Seconded. Carried.

Dr. J. B. Jackson moved that the Academy go on record as supporting Dr. Collisi and his committee and that a committee be appointed. Seconded by Dr. Andrews. Carried. Under discussion Dr. L. J. Crum brought up the point whether or not physicians should consult with osteopaths and cited letters received from Dr. Bruce and Dr. West, who disapproved of this. No action taken on this matter.

Applications for membership of Dr. Crawford and Dr. Damstra were read.

Dr. VanNess spoke briefly of the hospital situation in Allegan.

The scientific program was given by Sumner L. Koch. He was introduced by Dr. W. E. Shackleton. His talk on Infections of the Hand was certainly very instructive regarding the diagnosis and treatment to be used. I am sure that no clearer presentation could have been given on this subject. Slides, X-rays and diagrams well illustrated the various points that he stressed. The talk was discussed by Drs. Shackleton, Crum, F. T. Andrews, Goodrich, Collins, Stewart and Stryker.

Meeting adjourned.

JACKSON COUNTY

The January meeting of the Jackson County Medical Society was called to order by our new president, Dr. Randall Cooley, at the Hayes Hotel. Fifty-two members were present for the dinner. Dr. Riley was absent and Dr. Shaeffer, chairman for the evening program, acted pro tem.

No reports or new business was received. The scientific meeting immediately followed. Dr. Shaeffer reported the sale of forty-one season tickets at $10.00 per ticket and twelve single tickets for the January meeting. Dr. C. C. Young, director of the State Public Health Laboratories, was introduced by the chairman for the evening. Dr. Young chose

as his subject, "The Use and Abuse of Biological Products."

He outlined the idea of their use in the prevention of diseases and the need of more teaching in the medical schools. Few textbooks contain authentic information and the practicing physician must rely upon the "word of mouth" for his information. There are ten firms in the United States who manufacture biological products, and they publish some valuable information about their own products.

The subject of immunizing against smallpox, diphtheria and scarlet fever was discussed and the actual technique described. In vaccination of individuals against smallpox, he stressed the point of avoiding shields or tight dressing, of cleansing with a solution which dissolves the fatty secretions, such as zylol, ether and benzine. The harsh rubbing of the skin is to be avoided.

In describing toxin antitoxin administration, he touched upon the practical side of physicians themselves administering the product instead of permitting the health department to do it gratis. In commenting upon the toxoid, he said no preservative can be used at present in the product. This has caused deaths abroad and the State Laboratory will not release it to the public in Michigan. Goat serum toxin antitoxin is of little value.

In regard to scarlet fever he pointed out that we are not at present seeing many malignant cases. Therefore as a group procedure in schools he is not in favor of active immunization. Passive immunization is only indicated in the severe toxic cases early. Passive immunity lasts only twenty-one days and the contacts who might have been immunized might develop scarlet fever in the twenty-eight day period of quarantine.

In closing he stated he knew of no biologic treatment which was one hundred per cent sure. He expressed the feeling that the State Laboratory was working for the doctor and not the public. In the discussion which followed many ideas were brought out. The meeting then adjourned.

CALHOUN COUNTY

The February meeting of the Calhoun County Medical Society was held at the Veterans' Bureau Hospital, No. 100, Tuesday, February 4, 1930. Through the kindness of the hospital staff the meeting was preceded by a complimentary dinner in the dining room of the nurses' home, some fifty members of the society being present. During the dinner hour music was furnished by the hospital orchestra.

After a few words of welcome by the Hospital Director, Dr. H. G. Clark, a short business session was held. The minutes of the previous meeting, as printed in Bulletin, Vol. XIII, No. 2, were approved. A letter from the Calhoun County Bar Association, inviting the members, their wives and ladies to join them in a formal dinner and program to be held at the Battle Creek Country Club, Thursday evening, February 20th, was read, and it was voted to accept the invitation. Individual invitations were to be issued later.

Dr. J. E. Rosenfeld reported that through his attorney he had understood that in order to reach a proper settlement of bills, involving the care of indigent cases, the Poor Commissioner had agreed to abide by the decisions of an arbitration committee, and two members by the Judge of the Circuit Court. It was moved and carried that the Society appoint three members and that the Circuit Judge be asked to appoint the other two.

Committee: A. F. Kingsley, C. R. Hills, A. M. Giddings.

Dr. Stone called attention to the forthcoming History of Medicine in Michigan by Dr. Burr, which is about to be published, and urged each member to cooperate by sending $5.00, covering the cost of the first volume. The secretary offered to send in any orders sent to his office.

The following bills were ordered paid:

1. Battle Creek Sanitarium for Lantern and Operator $4.40
2. Flowers 9.00
3. Secretary Expense 7.70

The meeting was turned over to Dr. Hentz, chief of staff of the Veterans' Hospital, who called upon his associates to put on the clinical program.

Dr. Salisbury showed an advanced case of multiple sclerosis, and a case of epidemic encephalitis with Parkinsonian syndrome, giving the history of the development of these cases in detail. These two cases were discussed by W. H. Riley.

Dr. Walch presented a case of paranoid precox, showing high grade delusions with expansive ideas, whose chief thought and mental slant hinged about the war.

Dr. Ottis Like presented a case of hebephrenic precox, with loss of emotional interest but with hallucinations of grandeur, and with very active speech centers.

Dr. Hentz presented two cases of catatonic precox with emaciation, negativism, delusion, suspicions, and with statue rigidity of body in any particular pose. He stated that 75 per cent of the cases in the hospital were made up of various types of precox, and that 20 per cent were those of general paralysis. The war was given as an exciting cause in that class of individuals who were unable to adjust themselves to strain.

Members present, 50.

HARRY B. KNAPP, *Secretary.*

OAKLAND COUNTY

About 60 members of Oakland County Medical Society and Pontiac City Hospital staff in joint luncheon session at the hospital voted to recommend to the City Commission that the name of the hospital be changed to Pontiac General Hospital. It was decided that the recommendation should suggest the change be made effective at the formal opening of the unit now under construction.

It was pointed out that the proposed name bears a more general significance.

The program was of scientific nature with speakers and subjects as follows: Dr. George A. Sherman and Dr. R. H. Baker, "Multiple Neurofibromatosis"; Dr. Edward Howlett, "Traumatic Paralysis"; Dr. H. A. St. John, "Toxemia of Pregnancy"; and Dr. L. F. Cobb, "Prostatic Hypertrophy."

Dr. Robert G. Owen, Detroit, was a guest at the meeting. Dr. Frederick A. Baker was in charge of the program.

BERRIEN COUNTY

The Berrien County Society held their first meeting of 1930 at the Hotel Whitcomb in St. Joseph on Wednesday evening the 19th of February.

There were 35 at dinner and several others came in later for the business meeting and the paper following.

At the business meeting plans were further outlined for the state meeting to be held in September. Suggested dates were for the second or third weeks as hotel accommodations would be best and fruit season at its height. Dr. McDermott announced

the standing committees for 1930 as follows: Legislative, Herbert Kling, Abbe Henderson of Niles and C. A. Mitchell of Benton Harbor; Executive, H. O. Westervelt, Benton Harbor, Warren Smith, Berrien Springs, and C. W. Merritt of St. Joseph; Membership, John Ames, Niles, F. J. Witt, St. Joseph, and R. B. Howard of Benton Harbor; Grievance or Censors, F. W. Brown, Watervliet, H. J. Burrell, Benton Harbor, and D. A. Van Noppen of Niles.

Dr. Warnshuis' letter regarding committees for the state meeting was read. These committees were tentatively named and plans made for meeting to work out details under the head of a general chairman.

The Women's Auxiliary also met in the lobby of the hotel under the leadership of Mrs. Henry Bartlett of St. Joseph, the President, and made plans for entertaining the wives of doctors attending the convention. It is their plan to provide plenty of entertainment so that women attending will not have to look to their husbands for company during the meeting.

Applications for membership were handed to the membership committee from Dr. Gordon Rice of Watervliet, Dr. Clayton Emery of St. Joseph.

The speaker of the evening was Dr. John Hodgen of Grand Rapids. His talk was on fractures, dealing mainly with the Colles type. His paper was accompanied by lantern slides showing the anatomical construction of the wrist, articulation as well as X-ray pictures illustrating the before and after results of fractures.

The things emphasized particularly were the over-extension to break up impactions and splinting in extreme flexion by means of anterior and posterior plaster splints.

There was a lengthy discussion of the talk deviating into points not brought out in the paper: the old discussion of "to plate or not to plate," types of splints, when to do the open operation, etc. The paper was excellently delivered and the discussion extremely interesting and worth while.

The next meeting will be held in Niles in March. Entertainment will be provided by the members from that town.

W. C. ELLET, M.D., *Secretary.*

ST. JOSEPH COUNTY SOCIETY

The St. Joseph County Society held their March meeting on the fourteenth at the Klesner hotel in Centreville. As no arrangement had been made for an outside speaker several members reported recent interesting cases from their private practice. Dr. D. C. Weir of Three Rivers reported a case of cerebral embolus, Dr. Ray Dean reported a case of pulmonary edema, and Dr. G. J. Sweetland of Constantine reported a case of eclampsia. A round table discussion of these cases followed.

It was then decided to mail to each member a Cabot case history one week before the next meeting. At the meeting each member will discuss the case and give his diagnosis. After all have made their diagnosis the Case Report diagnosis will be read. We are looking forward to a fine and very profitable evening.

A committee consisting of Dr. John O'Dell and Ray Dean of Three Rivers and Dr. D. M. Kane of Sturgis was appointed to revise the prices for indigent cases.

Election of officers was then held. Dr. G. J. Sweetland, former secretary, was elected president, and R. A. Springer, secretary. Dr. C. G. Morris was elected delegate to the State Society.

R. A. SPRINGER.

WOMAN'S AUXILIARY, MICHIGAN STATE MEDICAL SOCIETY

MRS. L. J. HARRIS, President, Jackson, Mich.
MRS. J. EARL McINTYRE, Secretary, Lansing, Mich.

Do you remember how Chaucer in his Prologue to the Canterbury Tales says,

"Whan that Aprille with his shoures sote
The droghte of Marche hath perced to the rote"

and continues with,

"So priketh hem nature in hir corages
Than longen folk to goon on pilgrimages."

So many of our board and members of the auxiliary also have felt that longing to go on "pilgrimages" that really there are very few of us left, apparently, to keep the home fires burning.

There is plenty of fuel, however, we find, from reports of other states, and many interesting activities for county or city societies. In a letter recently received from Mrs. E. V. DePew, San Antonio, Texas, who is a chairman of the National program committee, she has inclosed a study program and says that others will be sent upon request. If your society has some definite object in view and meets regularly, you will find that you are living up to the object of the organization in "promoting acquaintanceship among doctors' families that closer fellowship may exist and do such other work as may be assigned from time to time, by the Michigan State Medical Society."

It is doubtless pretty well known to our physician husbands, if not to all wives, that the Eighty-first Annual Session of the American Medical Association occurs in Detroit June 23 and 27 inclusive. The Michigan State Medical Society and Auxiliary will grasp this opportunity not only of welcoming their guests to the State but will be there en masse to meet them. Michigan has a great deal to learn from the other States of organization as well as activities. It will also be a privilege to meet the National Officers and enjoy the program and social courtesies which will be extended to delegates. If you are near enough to Detroit to drive in for a day, plan to do that, if you are unable to spend all the time over which the session extends.

At a board meeting in Jackson in January Mrs. Kiefer was appointed Extension Chairman. As soon as the weather permits, Mrs. Kiefer and your president hope to organize other counties and perhaps call on some of the societies. Mrs. Bartlett of Saint Joseph was appointed chairman of the Hygeia Magazine committee. If you have subscriptions to renew or new ones to add, she will take care of them, as the state is anxious to increase its subscription list.

Most cordially,
MRS. L. J. HARRIS, *President.*

Mrs. Bazil Loren Connolley of Detroit was appointed local chairman and member of the National Social Committee, and your state president, Mrs. Lester J. Harris, was also honored by being appointed to that same permanent committee when Mrs. Southgate Leigh, National Chairman, visited Detroit recently.

Mrs. Leigh is working with local committees in their plans for the coming National Auxiliary Convention to be held in Detroit, in connection with the American Medical Association, from June 23 to 27.

Convention headquarters for the Auxiliary are to be at the Tuller Hotel. The state auxiliary is entitled to one delegate and one alternate for every one hundred paid members or fraction thereof.

Dues must be at the secretary's desk by March 31.

READ ORDER BLANK IN THIS ISSUE FOR MEDICAL HISTORY OF MICHIGAN

Of General Medical and Surgical Interest

SCIENCE AND CULTISM

Now and then the medical profession is upbraided by the proponents of various notions in the field of health and science because it fails to give to their claims what they conceive to be adequate consideration according to an editorial in the February 1 Number of the Journal of the American Medical Association. Again and again, the difficulties of Galileo, Harvey, Jenner and Pasteur, when they attempted to convince the leaders of their times of the importance of their discoveries, are cited as evidence that scientists are intolerant. Apparently cultists and others who have had but little experience in reasoning and logic, or with what is known as the scientific method, fail to take into account the fact that the world has moved since the time of the prophets, and that science has advanced more in the past fifty years than in the previous fifty centuries. James Harvey Robinson wrote an interesting essay on "The Importance of Being Historically Minded." With a proper perspective, one realizes that science is today in a position to demand evidence to an extent that might not have been warranted in a previous period when the whole world was dominated by magic and mysticism.

Recently, Mr. Chester Rowell, feature writer for the San Francisco Chronicle, discussed the appeal for tolerance made by faith-healing cults in the Los Angeles Times, following an exposé by the editor of the Journal of some of the weird quackeries existing in Los Angeles. Mr. Rowell says:

But the appeal for "tolerance," by one "school" of another, is an example of a common fallacy. There is no "tolerance" of astrology by astronomers. There is no "tolerance" of fortune-telling by psychologists, nor of perpetual motion inventors by physicists. Geologists do not locate oil or water by dowsing with a forked stick, nor "tolerate" those who do. Entomologists do not "tolerate" those who would exterminate insect pests by interfering with their spontaneous generation. Scientific agriculture does not "tolerate" the theory that potatoes grow wrong unless planted in the dark of the moon. All these "schools" exist, and they are all rejected outright as unscientific supersitions by every scientist in the world.

On the other hand, good Catholics tolerate the Holy Rollers, and Buddhists tolerate the Mormons. Atheists tolerate the faith of Christians and Christians the unfaith of atheists. Protestants and Christian scientists tolerate each other's religion, each respecting the right of the other to seek God in his own way. But the law of the land did not tolerate polygamy, when the Mormons said it was religion, and the Regents of the University of California do not permit an antivaccinationist student to endanger the health of other students, even though he calls his objection religious.

So in medicine. If it were a matter of faith, dogma or canons, one "school" should "tolerate" another. If it is a matter of science, then the only distinction is that of scientific and unscientific. And between science and non-science there is no equality of right, and no basis for tolerance. The fact that millions of devout people in India believe in casting their horoscopes by the stars does not erect them into a "school" of astronomy, nor impose on astronomy any obligation to recognize them. They are neither "regular" nor "irregular" astronomers —they are not astronomers at all. Neither is any unscientific theory or practice of healing any part of the science of medicine. There are only two sorts of medicine, scientific and unscientific. And of the unscientific "schools," science has only this to say—that they are unscientific.

How, then, shall we distinguish which principles and practices of healing are scientific, and which are not? The simplest test is that which we unhesitatingly apply in every other branch of knowledge. That is the judgment of scientists. If the scientists say that a certain thing is scientific, we accept it as such. If they all say it is unscientific, we say likewise, at least until it has succeeded in convincing them. Every scientific university in the world teaches astronomy, and not one teaches astrology. All of them teach chemistry and not one teaches alchemy. Every university in the world teaches scientific medicine, and not one of them—not a single one in the whole world—teaches or recognizes any of the "schools" or sects for which the Times speaks. If the unanimous voice of science means anything, this is its verdict.

The next test, and the decisive one, is that of method. Scientists may be mistaken, sometimes, in their results and conclusions. Sometimes a thing which seems true in the light of incomplete information becomes only partly true in the light of later discoveries. But science is not mistaken in its method. That method is systematic observation and experiment, and the submission of these observations and experiments to the scientists of the world, for them to repeat, to test and to scrutinize. Whatever pursues that method and is approved by that test is scientific—including, in medicine, light rays for tuberculosis, diet for many ailments and hydrotherapy for certain mental conditions. Whatever does not proceed by that method, or fails by that test, is unscientific—including all the cults, sects and schools which Dr. Fishbein rejects and the Times defends.

Mr. Rowell has placed his finger unerringly on the weakness of the cultists. His logic might well serve as a text in the schools, not only that it might aid the younger generation in learning the art of reasoning and judgment, but also that physicians might realize the basic folly of the strange schemes which are constantly being introduced to the public around them.

GALL BLADDER DISEASE MOST FREQUENT CAUSE OF "STOMACH TROUBLE"

"The most frequent single cause of 'stomach trouble' was disease of the gallbladder," Dr. Walter C. Alvarez of the Mayo Clinic, Rochester, Minnesota, found in 500 consecutive cases of indigestion or abdominal distress reviewed before the American College of Physicians at its recent meeting in Minneapolis.

"Actual disease of the stomach could be demonstrated in only 12 of the 500 cases," Dr. Alvarez stated. "As Dr. W. J. Mayo long ago pointed out, the stomach often serves as a firebox to call attention to a conflagaration elsewhere in the body. In many of these patients the fire was far away, in the brain, the teeth, the thyroid, lung, heart, spine, kidney, bladder, uterus, or blood vessels."

Definite disease of the digestive tract, such as

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inflammation of the gall-bladder, ulceration or cancerous changes in the intestines and stomach, or appendicitis was found in 175 cases or one-third the total number.

"In 43 cases the indigestion was thought to be due primarily to nervousness and in 50 more it appeared to be due to the congenitally frail, sensitive, or psychopathic make-up of the patient," Dr. Alvarez said. "In a number of cases it was due to the fact that husband and wife were at swords' points and the meals were being eaten to the accompaniment of bitter words. Often the patient was so nervous, so querulous, or so badly upset by fatigue and worry that it was hard to know what significance to attach to the symptoms, and the operation which would have been prescribed for a strong phlegmatic person with the same complaints was hardly thought of."

Some of the patients complaining of stomach trouble were relieved by a simple change in diet. In other patients the cause of the trouble was thought to be in the nerves or brain, with the stomach distress merely secondary. For these patients operation was not advised. Dr. Alvarez said further:

"In many cases the inability of the physician to make a positive diagnosis was due to the unwillingness of the patient to remain for a sufficient time under observation or to return when new symptoms appeared. Let us say that a woman has an attack of acute indigestion with pain in the upper abdomen and vomiting. It looks to her and her physician as if she must have eaten some spoiled food. But let her have four such attacks in six months with perhaps a little jaundice after one of them and it becomes obvious even to a layman that the biliary tract is probably diseased. The surest way in which to get a diagnosis is to return each time to the same physician, so that he can see the complete picture of the disease: the surest way in which to get poor treatment is to change physicians with each attack and to show each one only one short puzzling episode in a long-lasting, slowly developing chronic disease."—Science Service.

SENATORS TO DISCUSS GOVERNMENT CANCER PROGRAM

A group of United States Senators will shortly sit across the table from medical men and research specialists and try to decide what program the government should undertake in seeking the cause and cure of cancer.

Senator William J. Harris, of Georgia, heads a new subcommittee of the Commerce Committee, which will look into the recommendations already made by many of the country's most eminent surgeons and laboratory workers.

It is expected that many of those who have already written to the committee will appear in person for questioning and consultation. The head of the U. S. Public Health Service, Surgeon General Hugh S. Cumming, will probably be present at many of the meetings, and will assist in shaping whatever plans are adopted for governmental monetary aid, laboratories, or arrangements for government workers to conduct researches in laboratories already established.—Science Service.

CAUSE OF CATARACT AND NONOPERATIVE TREATMENT OF INCIPIENT "SENILE" CATARACT

John E. Weeks, New York, asserts that except in the relatively few cases of occupational cataract, the development of spontaneous cataract is due to nutritional irregularities, such as a lack of a sufficient supply of acceptable pabulum or the presence of toxins in the pabulum supplied (as in diabetes, intestinal disturbances, and foci of infection), or to endocrinopathy. While it is not possible to restore degenerated lens tissue, much can be done, particulary in the early stage of the development of cataract, to arrest or to retard its development by improving systemic and local nutrition. In the endeavor to arrest or to retard the development of senile cataract, Weeks determined to supplement improvement in general health by improvement in local nutrition, if possible, by periodically increasing the flow of blood in the anterior tissues of the eye. A number of measures were tried; eventually a mixture of equal parts of a solution of boric acid, 3 per cent, and glycerin was selected. It was found that this mixture, when instilled into the eye, produced a sharp, smarting sensation, lasting about a minute, and an active hyperemia. Hyperemia always follows the instillation of this mixture; tolerance, such as follows repeated instillations of ethyl-morphine hydrochloride, is not established; consequently it can be used indefinitely with the assurance of a uniform result. Patients were advised to instill the drops once daily, at night, in cases in which there was very little lens opacity; twice daily in more advanced cases. Although there is little danger of bacterial contamination, patients were advised to have the drops made fresh every month or six weeks. Treatment was discontinued only when arrest in the development of the cataract was assured. Patients were advised to report every six months or a year, or oftener if they thought necessary. All patients were notified of the presence of lenticular opacities (the term cataract was avoided when it was thought advisable) and thoroughly advised of the importance of the regular and persistent use of the drops. Patients were referred to their family physician for a thorough physical examination and were advised to have any conditions detrimental to health corrected, if possible. The tension of the eyeballs was tested in all cases by means of the tonometer (Schiötz) after it became available, whenever there was any suspicion of hypertension.—Journal A. M. A.

MECHANICAL FACTORS IN CONSTIPATION

Dudley Smith, San Francisco, enumerates causes of constipation, which are a tight or hypertrophied sphincter; hemorrhoids; pressure; prolapse; infection of the mucosa; diverticulitis; stricture; proctostasis; lacerated perineum; abnormal abdominal muscles; adhesions; cancer; and Houston valves. He asserts that in the treatment of chronic constipation all of these conditions should be borne in mind and either discovered and corrected or ruled out. They can be discovered only by careful examination—digital, anoscopic, sigmoidoscopic or careful physical and roentgen examination. It is to be regretted that many cases of constipation are daily treated without examination of the rectum and sigmoid. Physicians who would not think of treating sore throat, diseases of the chest, diseases of the female genitals or, in fact, any other region of the body, without careful examination all too frequently treat constipation by diet, laxatives and other methods without any examination to determine the cause of this symptom. It is the duty of physicians to call attention to this fact as often as possible until this situation is remedied. A careful examination of this region will often reveal unsuspected lesions of much more serious import than the complaint for which the patient consults the physician. Many illustrative cases could be mentioned. In Smith's judgment

every patient complaining of constipation or of any rectal trouble should be given the benefit of a careful examination of the lower bowel.

—Journal A. M. A.

FUSION OF KNEE IN PRESENCE OF INFECTION

C. F. Eikenbary, Seattle, asserts that the surgeon is not infrequently confronted with the problem of salvaging a joint which obviously cannot, by any surgical procedure, be made into a useful, movable joint. A tuberculous joint quite generally, and probably invariably, falls into this category. Certainly the tuberculous knee that has gone on to sinus formation has passed the point at which any cure can be expected except through ankylosis in a good position. The economic status of the patient must be considered. The surgical problem is concerned not alone with the question of curing the infected and painful knee but also with that of restoring the injured person to a position of economic independence. Eikenbary reports two cases which illustrate this point. Following the operation it is exceedingly essential that the most rigid degree of immobilization be maintained. This can be done only by means of a most extensive plaster cast, generally reinforced by heavy metal pieces in the neighborhood of the knee in order to admit of occasional dressings. Another point that Eikenbary thinks is most valuable is that dressings should be changed infrequently. It has been his experience that frequent dressings do far more harm than they can ever do good. In some of his cases he does not change the dressings more than once every two or three weeks, and it is rare that the dressings are changed more than once a week.—Journal A. M. A.

ACTION OF SPECIFIC DIURETICS

Experiments were made by George M. Curtis, Chicago, to answer the question of reflex anuria. The simultaneous administration of 100 c.c. of distilled water intraperitoneally at body temperature and the customary dose of the diuretic intramuscularly did not result in any diuresis in rabbits with denervated kidneys. Not only was the ordinary response to the specific diuretic blocked, but even the denervation polyuria was decreased. A secondary diuresis was evident. The blocking of the action of the specific diuretic cannot thus be the result of a reflex nervous inhibition of urinary secretion. Fluid recovered from the peritoneal cavity sixty minutes after the injection of distilled water was nearly isotonic and had a high concentration of electrolytes, with about 23 per cent other than chlorides. The nitrogen concentration of 0.24 per cent indicated albuminous substance approaching 1.5 per cent. When distilled water at body temperature is perfused through the peritoneal cavity of normal rabbits at the rate of 500 c.c. an hour, the blood chloride steadily falls. Other electrolytes are likewise dialyzed away from the blood and tissues. The secretion of urine soon diminishes and an anuria ensues. Injection of the diuretic during the perfusion does not produce any response. There is no secondary diuresis, since the intraperitoneal fluid acquires but a low concentration of electrolytes at any one time. The kidney is not incapacitated by the perfusion, since a marked diuresis results if simultaneously 2.5 per cent sodium chloride is given intravenously at the rate of 1 c.c. a minute. Various theories have been proposed to account for the action of the specific diuretics. Since the work of von Schroeder they have been thought to act directly on the kidney, and this is now the most generally accepted teaching. The view that they act extrarenally, however, is gaining adherents. These studies teach that the primary action of the specific diuretics is on the tissues. Under their influence permeability changes are initiated, resulting in a rapid passage of electrolytes, principally chlorides, into the blood stream. These act as stimulants to the kidney and initiate the formation of the urine. Opening up a new pathway for the chlorides and other electrolytes, by the simple procedure of intraperitoneal injections, definitely changes the ordinary response. Associated with the action on the tissues is doubtless a similar one on the renal cells.—Journal A. M. A.

WHY PATIENTS CONSULT THE GASTROENTEROLOGIST

George S. Stevenson, New York (1930), asserts that patients through their complaints express hidden motives that must be recognized if rapport and coöperation are to be assured. They have emotional or life problems that result in attitudes seriously influencing a plan of treatment. Often the unexpressed problems of the patient are more serious than the physical problem complained of. It is possible, by taking time and allowing the patient to talk, to reveal hidden motives and emotional problems, and the use of these facts in handling the patient is a big factor in the art of medicine. Psychiatry can probably make its greatest contribution to medical education by making the art of medicine more tangible and by making it available to the medical student in a way that will influence his everyday cases. Such an achievement in medical education, however, must come through pressure exerted on the psychiatrist by physicians in other fields and by avoiding a separation of the patient in bedside teaching into mental and physical.

—Journal A.M.A.

RECENT WORK ON CANCER

Charles F. Geschickter, Baltimore, reviews the work now in progress in European cancer laboratories, on the basis of a recent tour of investigation in Europe of four months' duration which furnishes one of the most reliable means of estimating the present status of cancer research. Work in America and in Europe in the field of malignant disease has become quite diversified but falls readily into the three fields of experimentation as to the cause, the diagnosis and the cure of cancer. There are four lines of investigation in the field of the cause of cancer—irritating agents, tumor filtrates, metabolic studies of the cancer cell, general systemic factors—which all embrace separate theories as to the origin of malignant growths. The metabolic studies of cancer, while most enlightening and encouraging, are at present beset with difficulties and shortcomings. All the metabolic experiments have had the shortcoming of comparing a malignant tumor arising in one type of tissue with normal tissue of a different and unrelated organ. No new form of cancer diagnosis applicable to all forms of malignant disease has been developed in recent years. In borderline cases at present the only standard is the combination of the microscopic observations with the clinical follow-up. This clinical follow-up is of necessity cumbersome and long drawn out. Therefore refinement in the microscopic technic to the point of certainty in tissue diagnosis is most desirable. The chief hope in this direction at present is a reliable differential stain for cancer. The search for a cancer cure is becoming more and

more widespread. Radium treatment has had a distinct rise in popularity both in Europe and in America, but in Regaud's clinic in Paris, where the results have been most carefully checked, this mode of treatment has been found useful only in cancer of epidermal origin and has a close competitor in surgery. Treatment of cancer by intravenous injections of colloidal lead has been abandoned practically everywhere. The quest for a vital dye to serve as a chemotherapeutic agent is being pursued in many European laboratories. The attempt to immunize against cancer is being tried by Lumsden in England and elsewhere in Germany. It is still in the experimental stage. Newer metabolic observations with regard to the respiration of tumor cells have been applied in the experimental treatment of cancer. Warburg of Berlin has tried to suffocate the tumor by an atmosphere deficient in oxygen, and Sokoloff of Prague has tried to exhaust it with overbreathing. Both methods have been confined to local growths in mice. A series of criteria for judging alleged cancer cures is easily formulated, although compliance with its requirements is difficult. Histologic diagnosis, cure of metastatic cases and permanent cures established by follow-up examinations, extending over five year periods, should be applied to all alleged cancer cures. From this point of view immediate cures of local tumors in experimental animals, however intriguing, are false alarms. Serious and extensive clinical trial of any method by workers other than its advocate should await, first, the submission of the sections to substantiate the diagnosis in all cured cases; second, proof that the disease had progressed to dissemination at the time of treatment; and, third, a five year follow-up to show the permanence of the cure.—Journal A.M.A.

SEES GREATEST HOPE IN CANCER HEREDITY STUDIES

The most hopeful thing about cancer has been brought out by Maud Slye's studies of cancer heredity in mice, Dr. H. Gideon Wells of the University of Chicago said in a recent lecture at the Johns Hopkins School of Hygiene and Public Health. This fact is that while a tendency to cancer is hereditary, a tendency to resist it is also hereditary, and the resistance to cancer dominates the susceptibility to it.

Cancer is about the same in animals and in man, and heredity is the same. Therefore, Dr. Wells believes that what we learn about cancer heredity in animals must have some relation to cancer in human beings. In fact, he said after the lecture that he considered the method of animal experimentation and the study the only way to solve this problem.

In most people the tendency to resist cancer is evidently stronger than the tendency to cancer, as only one-tenth of the population dies of cancer, Dr. Wells pointed out, and this bears out Miss Slye's studies on the heredity of mouse cancer. However, Dr. Wells observed that cancer generally does not develop until late in life and cancer mortality might be higher if people did not die from other causes before reaching the age at which cancer usually develops.

In speaking of this, Dr. Wells remarked satirically that the only sure preventive of cancer is an early death. However, the matter of cancer heredity is far from settled, and it is not so simple as it may appear, he concluded.—Science Service.

EINSTEIN THEORY INVADES PSYCHOLOGY

Freud's psychology, which the public has found so useful to explain its yearnings, motives, and shortcomings, is supplanted by something newer. Psychologists have discovered Einstein.

The newest school of psychological thought, the Gestalt theory, is based on the principle of relativity, which Einstein made famous in his explanations of the physical universe, Dr. Paul C. Squires, psychologist, declares in the Scientific Monthly. Like Einstein's communications to the world, the treatises on the Gestalt psychology have been couched in such abstruse language that laymen have not recognized their implications, he states.

Relativity psychology holds that our impressions of the world are in the form of patterns which shift and change as situations change, Dr. Squires explains. Red as we see it, for example, is relative, not absolute and unchanging. If we look at the redness cast on the snow by the rising sun, we consistently underestimate the redness of the snow. Snow is white, our minds insist, and the pattern that the snow scene presents to our minds is definitely controlled by that powerful idea of white snow. The same amount of red color on white paper brings a different pattern into existence and we see red. Our experience is thus like a kaleidoscope in which the pattern is always shifting. Any object in the pattern may have its meaning changed as the pattern shifts, and our attention is always fixed upon an object as it appears in the pattern, never upon the object as an independent bit of reality. The word gestalt may be translated pattern.

Once this idea of relativity is grasped, the student of human relativity can progress to something harder. Gestalt psychologists claim that there is such a thing as "pure motion," that is, movement can be apprehended as separate from the thing bearing the movement. Explaining such human experiences requires intricate experimenting and knowledge of physics and mathematics. The new psychology has had to work out fundamental laws showing the relations between space, time and intensity values necessary to produce illusions of movement, Dr. Squires states. These laws govern purely external conditions. There are also considered to be laws of a higher order which reside within the individual himself.

According to the new theory, "human behavior and physical events are different expressions of purely natural law," the psychologist explains.

—Science Service.

PIONEER EVOLUTIONIST TO HAVE MEMORIAL

Lamarck, the great French scientist of the late eighteenth and early nineteenth century who was Darwin's precursor in the field of evolution, is to have a memorial erected on the site of his birthplace, by a committee of the Société Linneénne du Nord de la France. For nearly a hundred years after his death in 1829, he had no other monument than the house where he was born, in Bazentin, a village of the Somme. This was in the path of some of the heaviest fighting during the war, and was completely demolished. The proposed monument is to be surrounded by a garden in which all the plants which have been named in honor of Lamarck or studied by him during his lifetime will be grown.

—Science Service.

PARROT FEVER INVADES AMERICA

What is probably only the second or third occurrence of psittacosis, or parrot fever, in this country has been reported from Annapolis, Maryland, where three people are seriously ill with this little-known but highly fatal malady. The disease was contracted from a parrot bought three weeks ago. The bird died on Christmas. The germ causing the disease has never been determined, although several organisms have been suggested. The disease has symptoms typical of pneumonia, develops within a week or ten days after exposure, lasts about 15 or 20 days and causes death in nearly half the cases. Outbreaks have been reported in European and South American countries, and two others, one in Boston and one in Hollywood, California, have been reported in the United States besides the present one in Annapolis. There is no indication of the disease being transmitted from man to man, Dr. George McCoy of the U. S. Public Health Service stated, so that probably no danger of an epidemic exists. Usually the outbreaks are limited to the household in which the infected parrot has been. However, a medical textbook advises isolation of the patient as a precautionary measure.—Science Service.

EXPECT BIG DECLINE IN TUBERCULOSIS DEATHS SOON

"The time is not far distant when a new major decline in tuberculosis may again take place," statisticians of the Metropolitan Life Insurance Company have declared. Their earlier prophecy that 1929 would see the lowest tuberculosis death rate ever recorded in the United States will certainly be fulfilled, they found after a review of the latest figures. Reports through the end of November, the latest available, showed a rate of 85.9 per 100,000, which is a decline of 5.7 per cent as compared with the corresponding period of 1928. Tuberculosis will some day rank among the relatively minor causes of death. A death rate of 40 per 100,000 will probably be approached during the next ten years.

"The greatest reduction in the mortality from tuberculosis has taken place in that group of the population where the situation has always been the gravest," the statisticians pointed out, referring to the group of wage earners and their families.

"With the attainment of a death rate of 40 per 100,000 we shall have reached the point where the end of the fight against tuberculosis will surely be in sight," they stated.—Science Service.

FOOD CALORIES ALIKE WORLD OVER

Exacting dietitians and those who carefully gauge the energy values of their food are assured even greater nutritional accuracy than they have enjoyed in the past by the new definition of the calory, the unit of heat energy determined by the group of physicists in London.

In the past the calory was the amount of heat required to raise the temperature of one gram of water one degree Centigrade. The big calory was 1,000 times the size of the calory. Now the big calory is called one eight hundred and sixtieth of a kilowatt-hour.

The trouble with the original calory is that it is not always the same. While the differences are not great enough to be of much concern to the engineer they are of sufficient size to worry the physicist in the laboratory, and even make some difference to the dietitian.

The gram is not always of the same weight. At the seashore it is heavier than it is on the mountain top. And then, a slightly different amount of heat is required to raise the temperature of water from three to four degrees than is needed to increase it from 87 to 88 degrees.

But, now, the definition is in terms of unvarying quantities—force, mass and acceleration—the simple relations that hold constant wherever and whenever applied.—Science Service.